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AND

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CONTENTS.

PAGE

A—Albuminuria ... 302
Acute Cerebral Lesion, Some Cases of 321
Anastomosis, Intestinal ... 115
Anatomy, Surgical ... 249
Angioma of the Globe ... 225
Appendicitis ... 115, 265
Arthrodesis of Shoulder Joint ... 219
Atlas and Principles of Bacteriology ... 372
Atrophy, Progressive Muscular ... 48
Auto-intoxications of Pregnancy ... 118

B—Barling, Gilbert, M. B., B. S., F.R.C.S., 193
Bacteriology ... 253, 312
Bag for Clover's Inhaler ... 231
Bath Electric Series ... 47
Baths, Albuminuria following Cold ... 302
Brain, Functions of ... 179
Breast, Diseases of ... 257
Bright's Disease ... 298
British Association for the Advancement of Science ... 317

C—Carter, Alfred H., M.D., M.Sc., F R.C.P., 1
Calculi, Oxalic Renal ... 303
Carcinoma of Sigmoid Flexure ... 119
" Rectal ... 281
Chemistry, Physiological ... 124
Chloroma ... 353
Clover's Inhaler, Bag for ... 231
Colitis, Muco-membranous ... 115, 175
Colotomy ... 281
Compensation in Mitral Incompetence 50
Consultants and the Working Classes 313
Consumption, The War Against ... 311
Cornea, Ulcer of ... 226
Correspondence ... 313, 376
Cyst, Ovarian ... 50, 229
Cyto-Diagnosis of Urine ... 301

D—Diabetes ... 291
Digestion, Disorders of ... 236
Digestive Organs in Infancy and Childhood, Diseases of the ... 375
Dyspepsia, Atonic ... 1

E—Eales, Henry, M.R.C.S., 11—Emanuel, J. G., M.B., B.S., B.Sc., 215.
Editorial Notices—
Clinical Lectures ... 33
Electricity, Medical ... 47
Embryology ... 188
Emulsion, Albuminuria ... 302
Epilepsy ... 65
Eye, Examination of ... 185

F—Foxwell, Arthur, M.A., M.D., M.Sc., F.R C.P., 301.
Fainting and another of Vomiting after Operation under Ethyl Chloride Narcosis, A Case of ... 351

PAGE

Fibro-myoma of Uterus ... 230
First Aid ... 247
Forensic Medicine and Toxicology ... 376

G—Goitre, Exophthalmic ... 34
Gall-stones, Medical Treatment of ... 232
Gastric Ulcer, Perforated ... 174
Gastro-Enterostomy ... 48
Glandular Affections, Tubercular, Treatment of ... 111
Globe, Angioma of ... 225
Graves' Disease ... 40

H—Heaton, George, M.B., B.Ch., F.R.C.S., 79, 265—Hichens, P. S., M. A., M. B., M. R. C. P., 94—Hewetson, John T., M.D., F.R.C.S., 129, 201—Haslam, William F., F.R.C.S., 257—Hall-Edwards, J., L.R.C.P., 334.
Hæmoglobinuria ... 301
Healing of Nerves, The ... 373
Hernia, Strangulated ... 228
Hernia, Umbilical ... 193
Histology ... 251
Hygiene ... 252
Hypertrophy, Cardiac, caused by Nephritis ... 300
Hysterectomy ... 49, 227

I—Impotence, Sexual ... 253
Infant Feeding ... 187
Injuries by Friction and Movement, The Treatment of ... 368
Intestines, Diseases of ... 228, 241

K—Keratitis, Interstitial ... 230
Kidney, Diseases of 182, 231, 291, 306
Koch's Tuberculin R. ... 46

L—Leucocytosis, Clinical Significance of ... 129, 201
Leukæmia ... 27
Lupus, Treatment of ... 46

M—Milward, F. V., M. B, B. C., F.R C.S., 281—McCardie, W. J., B.A., M.B., B.C., 351—Miller, James, M.B., 353.

Medical Abstracts—
Exophthalmic Goitre By James W. Russell, M.A., M.D., M.R.C.P. ... 34
Report on Renal and Urinary Diseases. By Prof. Robert Saundby, M.D., M.Sc., LL.D., F.R.C P., ... 291
Chloroma—The Relation of the White Blood Corpuscle to several Surgical Diseases, especially to Appendicitis — Paratyphoid. By James Miller, M.B. ... 353
Medicine ... 61, 121, 126, 239, 242, 243

PAGE
Meningitis, Pneumococcus ... 215
Middlemore Lecture 11
Mitral Incompetence, Compensation in 50
Modification of Scarpa's Shoe .. 361
Mooren's Ulcer of the Cornea 226
Myoma of Uterus 227

N—Nephrectomy for Pyonephrosis ... 174
Nephritis, Surgical Intervention in 298
Nephro-lithotomy 175
Nervous System, Disease of 249
Nervous and Mental Diseases .. 371
Neurasthenia, Treatment of 309
New Inventions, Drugs, etc.— 63, 127, 191, 254, 319
Nordrach Method of Treating Consumption 94
Nursing 63

O—Obstetrics 189, 246

ORIGINAL COMMUNICATIONS—

- Clinical Lecture on Atonic Dyspepsia. By Alfred H. Carter, M.D., M.Sc., F.R.C.P. 1
- Clinical Lecture on some Cases of Acute Cerebral Lesion. By Arthur Foxwell, M.A., M.D., M.Sc., F.R.C.P. 321
- The Middlemore Lecture.—Some Functional Disorders of Vision. By Henry Eales, M.R.C.S. .. 11
- Leukæmia. By T. Law Webb, M.B., B.Ch. 27
- Epilepsy. A Clinical Lecture. By Robert Saundby, M.D., M.Sc., LL.D., F.R.C.P. 65
- Modern Methods of Treatment of Gonorrhœal Urethritis. By George Heaton, M.B., B.Ch., F.R.C.S. .. 79
- The Nordrach Method of Treating Consumption, and some of its Results. By P. S. Hichens, M.A., M.B., M.R.C.P. 94
- The Clinical Significance of Leucocytosis. By John T. Hewetson, M.D., F.R.C.S. 129, 201
- Clinical Lecture on Umbilical Hernia. By Gilbert Barling, M.B., B.S., F.R.C.S. 193
- Clinical Lecture on Diseases of the Breast. By William F. Haslam, F.R.C.S. 257
- Appendicitis: Its Prognosis and Treatment. By George Heaton, M.A., M.B., F.R.C.S. ... 265
- Rectal Carcinoma, and the Prolongation of Life by Colotomy. By F. V. Milward, M.B., B.C., F.R.C.S. 281
- On The Therapeutic Effects of Light and the X-Rays. By J. Hall-Edwards, L.R.C.P. 334

Orthopædic Surgery 219
Ovary, Cyst of 229
Oxalic Renal Calculi, Prophylaxis of 303

P—Pancreas, Antitoxic Action of 296
Papilloma of Kidney 231
Paratyphoid 357
Pathology, Chemical 308
Pharmacology 237, 253

PAGE
Phonographers, The Society of Medical 254
Phthisis, Treatment of 46
Phthisis and Sanatoria 362
Physiologic Therapeutics, a System of 369
Pneumococcus Meningitis 215
Popliteal and Gluteal Bursæ 361
Porro's Operation 49
Potato Cure of Diabetes... 294
Practical Physiology, Outlines of .. 374
Pyonephrosis 120, 174
Pyosalpinx, Double 178

R—Rectal Carcinoma 281
Rectal Carcinoma, and the prolongation of life by Colotomy 361

REPORTS OF CASES—

- A Case of Primary Pneumococcus Meningitis simulating Puerperal Eclampsia. By Thomas Wilson, M.D., F.R.C.S., and J. G. Emanuel, M.B., B.A., B.Sc. ... 215
- A Case of Fainting and another of Vomiting after Operation under Ethyl Chloride Narcosis. By W. J. McCardie, B.A., M.B., B.C. ... 351

REPORTS OF SOCIETIES—

- British Medical Association. Birmingham and Midland Counties Branch 46, 47, 173, 360
- Midland Medical Society. 48, 118, 176, 225
- Clinical Society of London 50
- Kidderminster Medical Society 178, 362

REVIEWS OF BOOKS—

- Ballance and Stewart on the Healing of Nerves 373
- Bergey, The Principles of Hygiene 252
- Brunton, On Disorders of Assimilation, Digestion, etc. 236
- Burdett's Hospitals and Charities ... 313
- Bury, The Bradshaw Lecture on Prognosis in relation to Disease of the Nervous System 249
- Church and Peterson on Nervous and Mental Diseases 371
- Davidson, Syllabus of Lectures to Nurses 63
- Davis, A System of Physiologic Therapeutics 369
- Edwardes. A Concise History of Small-pox and Vaccination in Europe 311
- Emery, Handbook of Bacteriological Diagnosis for Practitioners ... 312
- Fagge, Text-book of Medicine, Fourth Edition. Vol I 61
- Fischer, Infant Feeding in its relation to Health and Disease .. 187
- Galbraith, The Four Epochs of Woman's Life 250
- Garrigues, Text-book of the Diseases of Women 191
- Gorham. A Laboratory Course in Bacteriology 253
- Greeff, A Guide to the Microscopic Examination of the Eye 185
- Heisler, A Text-book of Embryology 188
- Hemmeter, Diseases of the Intestines Vol I. 241

PAGE

Herter, Lectures on Chemical Pathology in its relation to Practical Medicine 308
Hood on the Treatment of Injuries by Friction and Movement . 368
Hollander, The Mental Functions of the Brain 179
Keay. The Medical Treatment of Gall-stones 232
Langley. Practical Histology .. 251
Lehmann and Neumann's Atlas and Principles of Bacteriology . 372
Lockwood, A Manual of the Practice of Medicine, Second Edition ... 126
Mackenzie on the Study of the Pulse, Arterial, Venous. and Hepatic, and of the Movements of the Heart 365
Mann, Forensic Medicine and Toxicology 376
Morris, Surgical Diseases of the Kidney and Ureter 182, 306
Muirhead. The Causes of Death among the Assured in the Scottish Widows' Fund 304
Murray. Rough Notes on Remedies, Fourth Edition 246
Nothnagel, Encyclopedia of Practical Medicine ... 121, 243
Osler. The Principles and Practice of Medicine, Fourth Edition .. 242
Proust and Ballet, The Treatment of Neurasthenia 309
Pye, Elementary Bandaging and Surgical Dressing, Ninth Edition 247
Robson and Moynihan, Diseases of the Stomach and their Surgical Treatment 56
Schaeffer, Anatomical Atlas of Obstetrics, with Special Reference to Diagnosis and Treatment ... 189
Schaeffer, Atlas and Epitome of Labour and Operative Obstetrics 189
Sollmann. A Text-book of Pharmacology 237
Starr on Diseases of the Digestive Organs in Infancy and Childhood 375
Stirling's Outlines of Practical Physiology 374
Syers A New Text-book of Medicine 239
Taylor, The Sanitary Inspectors' Hand-book, Third Edition ... 252
Thornton, Dose Book and Manual of Prescription Writing. Second Edition 253
Treves, Surgical Anatomy, New Edition 249
Tubby, Clinical Lectures on the Various Forms of Intra-Abdominal Suppuration 125
Vecki, The Pathology and Treatment of Sexual Impotence Third Edition 253
Vinrace, The War against Consumption 311
Warwick and Tunstall, First Aid to the Injured 247
Weber, A System of Physiological Therapeutics. Vols. III. and IV 234

PAGE

Wolf, A Laboratory Handbook of Urine Analysis and Physiological Chemistry 124
Edinburgh Medical Journal, New Series. Vol. X .. 251
Index Catalogue of the Library of the Surgeon General's Office, United States Army, Second Series. Vol. VI. 248
Journal of Obstetrics and Gynæcology of the British Empire .. 246

S—Saundby. Robert. M D., M Sc, LL.D., F.R C P., 65.
Sarcoma of Ovary 361
Sarcoma of Fibula 361
Scleroderma, Diffuse Symmetrical ... 118
Sclerosis, Insular 177
Scottish Widows' Fund. Mortality ... 304
Shoulder Joint. Arthrodesis of 219
Sigmoid Flexure. Carcinoma of .. 119
Small-pox in Europe 311
Spina Bifida 176
Spleen, Surgery of 115
Stenosis, Mitral, Incompetence in ... 50
Stomach. Diseases of 1, 59
Stomach. Surgery of 113
Study of the Pulse, Arterial, Venous. and Hepatic, and of the Movements, of the Heart 365
Sugar in Diabetic Urine. Estimation of 297
Suppuration, Intra-Abdominal 125

SURGICAL ABSTRACTS—

By Leonard Gamgee, F.R C S. ... 111
Orthopædic Surgery. By W. Duncan Lawrie, M.D, F.R C S E. ... 219

T—Tabloids, New 319
Therapeutics 234, 246
Therapeutic Effects of Light and the X-Rays, On the 334
The Relation of the White Blood Corpuscle to several Surgical Diseases, especially to Appendicitis 356
Thyroid Gland, Diseases of 34
Thyroidectomy 112
Trendelenburg Position, Modified ... 229
Tuberculin R. 46

U—Ulcer of Cornea 319
Ulcer, Perforated Duodenal 177
Ulcer, Perforated Gastric 174
University of Birmingham ... 127, 318
Ureter, Diseases of 182, 306
Urethritis, Gonorrhœal, Treatment of 79
Urinary Diseases 291
Urine, Analysis of 124
Uterus, Myoma of 227. 230

V—Vaccination in Europe 311
Vision, Functional Disorders of ... 11

W—Webb, T. Law, M.B, B.Ch., 27—Wilson, Thomas, M.D., F.R.C.S., 215.
Women Diseases of ... 191, 246, 250

THE
BIRMINGHAM MEDICAL REVIEW.
JANUARY, 1902.

ORIGINAL COMMUNICATIONS.

CLINICAL LECTURE ON ATONIC DYSPEPSIA.*

BY ALFRED H. CARTER, M.D., M.SC., F.R.C.P.
SENIOR PHYSICIAN TO THE QUEEN'S HOSPITAL

Gentlemen,

I propose to speak to you to day about a common form of indigestion, of which the chief feature is atony or weakness of the muscular coat of the stomach, and to which the name of gastric myasthenia is often applied. You should understand that normal digestion depends upon the co-operation of three forms of activity—chemical, mechanical, and nervous. The first of these is related to secretion, the second to the muscular coat of the stomarch, and the third to the nervous system by which both of the former are actuated and controlled. In practice we find secretory, motor, and nervous disturbances are very generally combined; but at the same time it often happens that one or other form of disturbance predominates, so as to give a special type to the gastric disorder, and thus to justify—for practical purposes—clinical distinction. Atony of the stomach, then, is in the main a motor disorder, characterised by muscular weakness of the organ, and consequent inability to discharge its contents into the bowel within the normal limit of time. It is this delay of food in the stomach to which the symptoms of gastric atony are due. As a result of such delay, the later meals of the day are taken before the stomach has properly disposed of those which have gone before. In ordinary cases, the longer interval which separates the last meal of one day from the first meal of the next, is sufficient to allow the stomach to be completely emptied; but in severe cases, it may be insufficient for this to take place, and the consequence is that the stomach is never empty, the contents are apt to ferment, and the cavity of the organ becomes dilated. In these facts we have a basis for a two-fold clinical division, according as the stomach becomes empty once in 24 hours, or is never empty. You may call the former, atony with stagnation; and the latter, atony with retention. The distinction is important, because not only are the signs and symptoms different, but the treatment is different in each case, as I will show you.

---

* Delivered at the Queen's Hospital, Birmingham, December 7th, 1901.

Before discussing the matter further, allow me to read to you brief notes of the following cases:—

Miss N., aged 19, quite healthy up to about 18 months ago. About that time began to work very hard in training for a governess; studying for long hours in a cramped position over a table; wearing tight and rigid corsets; hurrying over her meals; sitting up late; sleeping badly; and anxious about her examinations. For some time past has complained of weight and uneasiness after meals, which gradually passes off as digestion proceeds, and troublesome flatulent eructations. The discomfort is only slight after breakfast; worse after luncheon; and still worse after dinner. The character of the food seems to influence the discomfort less than its quantity. It is no better, but rather worse after liquid than after solid food; and any food beyond quite a small quantity is sure to cause uneasiness. There is no vomiting. The bowels are costive She is losing flesh and strength, probably because she is working hard and taking insufficient nourishment.

The abdomen is soft and flacid, without tenderness. Splashing sounds are readily obtainable, though five hours have elapsed since the last meal—a light breakfast. There are no indications of dilatation of the stomach. The tongue is pale and flabby, and indented by the teeth. The urine is neutral; depositing amorphous phosphates on boiling; no albumen; no sugar.

Under careful regulation of the diet, reduction of the amount of fluid drinks, rest after meals, and change in the habit of life and work, the patient greatly and quickly improved.

S. H., a man of 26 years of age, was admitted into this hospital on October 21st, 1894. Has been a nail-maker for last 11 years, with long hours of work. A hearty and quick eater; besides which, he was accustomed to drink large quantities of water while at work. A total abstainer from alcohol. Had influenza two years ago, and dates present trouble from that; because ever since then his digestion has been very uncomfortable. He chiefly complains of weakness, constant tiredness, and disinclination for work, which seem to be increasing. Never comfortable in his stomach; has great distension after meals, especially towards the end of digestion, with frequent belching of sour irritating matter. Vomits every three or four days, which is sometimes preceded by waterbrash. Vomit abundant, frothy, and very sour. Appetite bad; losing flesh; wakes in the morning with a headache and nasty taste in the mouth. Bowels irregular,

On admission: A tall, thin man, tongue coated, large, and indented by teeth; abdomen large and flabby; no tumour; stomach dilated, and reaches below umbilicus. Splashing sounds obtained over stomach at any time—not only during the intervals between meals, but also in the early morning. Ten grains of salol were given, and the urine was tested with ferric chloride every half-hour; but no salicyluric reaction was observed for 3½ hours, at which time the patient vomited. Four grains of potassium iodide were administered in a gelatine capsule, and no trace of iodide was found in the saliva until twenty-two minutes later.

Under treatment with dryish food, occasional lavage, and artificial abdominal support, he rapidly improved, the vomiting never recurred; and in three weeks he was discharged, having gained 2lb. in weight.

These two cases, representing, as they do, two different degrees of gastric atony, afford an opportunity for considering some practical points in connection with the subject.

The causes of atony fall into two principal groups—those acting directly upon the stomach, such as large eating and drinking, hurried meals, large drinks between meals, and so on; and those acting indirectly by lowering of the general health and nutrition, such as bad hygiene, nervous exhaustion and anxiety, and exhaustion brought about by severe acute disease, especially typhoid fever and influenza. The former group, where the etiological factors are comparatively easy to get at, and to remove, are obviously more amenable to treatment than those in which there is marked deterioration of the general health. In the same connection it is important to keep in mind the share taken by the general physical conditions under which the stomach is called upon to do its work, and particularly with regard to the tone and strength of the abdominal walls. As the result of repeated pregnancies, deficient exercise, and constriction of the waist by belts or corsets, the abdominal walls are apt to lose their tone, and fail to give to the stomach an adequate mechanical support. Tight corsets are one of the commonest contributory causes of atonic dyspepsia in women, and tend to bring about a downward displacement of the stomach, which greatly increases the difficulty of the stomach in getting rid of its contents. The operation of these causes is well illustrated by the two cases I have reported to you. In the first we have to do with sedentary occupation, hard work, anxiety, cramped position, and constriction from corsets; while in the latter, the chief causes are to be found in post-influenzal exhaustion and debility, coupled with the habit of drinking large draughts of water between meals.

With regard to the recognition of motor insufficiency, Chomel's sign—namely, splashing of the gastric contents on percussion—is by far the most generally useful. The factors which are necessary for its production are the simultaneous presence in a flabby stomach of watery fluid and air. In a normal empty stomach, a large tumblerful of water is discharged into the duodenum in the course of 1 to 1½ hours. It is now known that water is not directly absorbed from the stomach, or only to a very small extent. If, then, splashing sounds can be elicited later than this, we may safely conclude that there is motor insufficiency, in proportion to the extent of the delay. Under normal circumstances splashing sounds cannot be elicited at all, or only for a short time, after taking a meal. In motor insufficiency they can be elicited during the whole of the digestive period. In simple atony with stagnation no splashing sounds can be elicited in the morning before breakfast, whereas in atony with retention the contrary obtains. You will remember that in the second case of the two I have reported, splashing was readily obtained in the fasting stomach, thus establishing the fact of retention beyond all doubt. You will thus see that splashing is not *per se* of any morbid significance, but it becomes so in proportion to its persistence. Some little care is required in making the observation. It is necessary, for instance, that the abdominal wall should be thoroughly relaxed, and the shock transmitted by the fingers should be suddenly produced, and strictly vertical in direction.

The salol test of Ewald, referred to in the second case, has also a certain value, but it is inconvenient, and not altogether trustworthy. Under normal circumstances, the presence of salicyluric acid in the urine should be observed at the latest 1½ hours after administration. In the case related it was not observed for 3½ hours.

On the other hand, by means of the stomach-tube, it is possible to obtain unequivocal information as to whether the onward passage of the gastric contents is delayed or not. After an ordinary Ewald's test-breakfast of bread and tea, the quantity of fluid which can be withdrawn an hour later rarely exceeds five ounces. If it is more than this, there is motor insufficiency of the stomach, in proporton to the excess. Or again, if in seven hours after an ordinary full mixed meal the stomach is still unemptied, motor insufficiency is unquestionably proved.

Having by one or all of these methods established the fact that the stomach does not get rid of its contents as soon as it ought, it is necessary to ascertain whether this result depends upon simple motor weakness, or upon some mechanical impediment to escape. In other words it is necessary to distinguish gastric atony (as a simple functional disorder) from pyloric obstruction. This distinction, though useful from a clinical standpoint, is not quite so rigid as you might suppose. Thus, long-standing cases of atony are very apt to be associated with more or less gastroptosis, or downward displacement of the stomach—a condition which introduces factors of an obstructive order over and above mere motor weakness. Again, in the latter stages of all cases of pyloric obstruction, there is always associated motor weakness of the stomach.

Gastroptosis is readily recognised, when well marked, by the altered contour of the abdomen, by observation of the area over which splashing sounds may be produced, by palpation, and (if needed) by artificial inflation of the stomach through a tube.

The exclusion of pyloric obstruction is often very difficult in the absence of palpable pyloric induration or an actual tumour. Although I cannot now go fully into the question of diagnosis, I may draw your attention to the following points. Atony only exceptionally gives rise to very marked retention of contents, and dilatation of stomach. In such cases, the presumption is in favour of some mechanical impediment at the pylorus. The evolution of atony is slow and mild, whereas the evolution of obstructive insufficiency is more often rapid, painful, and stormy. Again, if the symptoms and signs of insufficiency come on late in life, without previous history of dyspeptic tendencies, especially if associated with marked emaciation, they are more likely to be due to malignant obstruction. This suspicion is further strengthend by the absence of free HCl., and the presence of considerable lactic acid in the vomit. Lastly, the presence of undigested fragments of food taken on the previous day in fluid removed from the fasting stomach by the tube at early morning, points very strongly to some mechanical obstruction of the pylorus.

Having arrived at a diagnosis of atony from a course of enquiry such as I have indicated, we come to the important question of treatment; and, in this connection I shall first describe the management of the more common form which is associated only with stagnation of food, and then pass on to that of the less common form with retention.

Atony with Stagnation.—The chief indications in the way of diet are—to avoid over-distension; to give time and opportunity to the stomach to get rid of one meal before another becomes due; and to meet the requirements of nutrition. It is not always easy to reconcile these indications. For instance, you may avoid over-distension by giving very little food, but with the risk of starving your patient; or, in your endeavour to nourish your patient sufficiently, there is not time for the stomach to empty itself before the next meal is taken. Speaking generally, we have to choose between two plans—(*a*) giving small meals at shorter intervals than usual; and (*b*) giving a carefully selected, but fairly substantial meal, at longer intervals than usual. The latter is the better plan when the appetite is fairly good—say, three meals a day, at 8 a.m., 1.30 p.m., and 7 p.m. If the appetite is bad, it is often wiser to give food every three hours. The habits of life have also to be considered. Thus, if a patient can afford the time to rest for a considerable time after each meal, he may be able to take much more food at a time than under opposite conditions. One of the most disturbing meals of the day, coming, as it usually does, near the height of the digestion of dinner, is "afternoon tea." In mild cases, the mere stoppage of this meal suffices often to give substantial relief.

With regard to the character of the food, the two most important rules are—(1) reduction of fluid taken *with* food to a minimum; and (2) the selection of compact nutritious food, such as meat, lightly boiled egg, and easily digestible cereals, such as flaked wheat or oatmeal. Milk taken alone is eminently unsuitable. While proper nutrition demands that the diet should be mixed, it may be pointed out that animal food is more suitable than vegetable food. Such vegetables as are taken should be pulped. Easily fermentable food should be avoided, such as sugar in excess, and fruit preserves. Pastry, either boiled or baked, and all puddings containing suet should also be forbidden. Soups should only be taken sparingly, or not at all. At the same time, a small quantity of vegetable purée is often admissible. Light wine, when the appetite is poor, may be desirable, or a little good spirit, well diluted. Fluid drinks should be mainly supplied when the stomach is empty or when digestion has well advanced. Thus, a glass of water may be taken early morning and at bedtime, while about half a pint of hot weak tea (without anything to eat) may be sipped at 5 p.m.

Rest for at least twenty or thirty minutes should always be taken after each meal. Hurrying over breakfast, and rushing to meet trams and trains are responsible for many cases of atonic dyspepsia.

No tight clothing, such as belts or corsets, should be permitted; and great benefit is derived from exercises designed to strengthen the abdominal walls, weakness of which is very common in women, particularly in those who have borne children. A light close-fitting abdominal support is often of the greatest service. Massage of the abdominal muscles is useful in certain cases; and another valuable adjuvant is the daily employment of the alternating or Scotch douche to the abdomen—half a minute with water at 95°, then for half a minute at 65° or 70°, and so on alternately for four or five minutes; after which the patient should lie quietly for twenty minutes, wrapped in a long Turkish towel.

As to medicine, strychnia is the most valuable drug, either combined with bicarbonate of soda and arsenic, and given just before meals; or combined with hydrochloric acid and pepsine after meals. No strong aperients should be used for constipation, nor do I find that the habitual employment of saline aperients is desirable. Personally I prefer to clear out the lower bowel by an enema in the first instance, and then keep up the action with a daily minimal dose of some such aperient as cascara or aloes in combination with belladonna and nux vomica, taken after dinner.

Atony with retention.—Here the primary indication is to prevent, or at least control, fermentation. The difficulty of adjusting the capacity of the stomach to deal with food, with the requirements of nutrition, is greater than in the simple form. In decided cases it is better to send the patient to bed for a week or so. You gain three advantages :—Less food is required, the position of the patient is more favourable to the escape of food from the stomach; and it is convenient for lavage, or rectal feeding, if required.

As to diet, we have here to rely mainly upon nitrogenous food, *e.g*, boiled fish, shredded, scraped, or pounded meat, meat jellies, beef-meal, plasmon, protene, and such like foods. Milk rarely agrees. A moderate allowance of well cooked cereals may be permitted; but no fruits, jams, or puddings. Boiled rice is a useful substitute for potato. Bread-stuffs should only be taken in the form of crisp toast, rusks, biscuits, or zwieback. Four meals a day answer best—say, at 8, 12, 4, and 8. As to drinks, half a tumbler of hot water may be given an hour before each meal. There is no objection to a small quantity of good spirit with some of the meals—say, ʒij in a wineglassful of water. No tea or coffee.

In all but the mildest forms, washing out of the stomach is essential, for really good results. The best time is in the morning as a rule; but if sleep is restless and disturbed from stomach disorder, it may be advisable to carry out the washing the last thing at night. Warm water, containing a teaspoonful of boric acid and about 15 or 20 grains of salicylic acid to the pint, is the best lavement. Medicinally, an alkali is indicated in combination with some anti-fermentative, such as sulphocarbolate of soda, or resorcin. It is often beneficial to give twenty grains of carbonate of bismuth immediately after washing out the stomach.

When fermentation ceases, the plan of treatment advised for simple insufficiency of the first degree should be followed.

It must be understood that inasmuch as atony of the stomach is often combined with other disorders, especially with secretory disturbances, or some form of gastritis, the treatment which I have described to you will have to be modified in certain details, the consideration of which may occupy us on some future occasion.

THE MIDDLEMORE LECTURE.

SOME FUNCTIONAL DISORDERS OF VISION.

BY HENRY EALES, M.R.C.S.,
SENIOR SURGEON TO THE BIRMINGHAM AND MIDLAND EYE HOSPITAL.

Gentlemen,

The choice of a subject on which to address you has caused me some misgivings. On the one hand it seemed desirable to choose some subject which could be demonstrated the more clearly to you by the aid of cases presenting signs obvious to all; but after some reflection I thought it might be well to discuss with you some functional disorders hardly capable of much elucidation by this means: (1) because such disorders are of common occurrence in the practice of most, (2) because they are interesting in themselves, and a right understanding of them of importance to both doctor and patient, (3) because they are due to the general type of constitution of the patient, and the state of his general health, and therefore very proper for your consideration.

SCINTILLATING SCOTOMA.

I propose, in the first place, to deal with that disorder called scintillating scotoma, because it commences usually as a bright sparkling spot in the field of vision; sometimes called amaurosis partialis fugax, from its partial and evanescent effect on vision, and also known as teichopsia (from *τεὶχος* a wall, *οψις* vision), on account of the zigzag lines often seen around the scintillating spots like the walls of the fortifications round Paris; and also described under the title of ophthalmic migraine, on account of its association with migraine.

This affection is very common, indeed, much more so than generally supposed—(1) because many patients have become so accustomed to these recurrent attacks that rapidly pass off leaving no ill effects, that they make no complaint of them; (2) because if they do complain, it is rather on account of the headache which follows this peculiar temporary visual disorder, which itself is not described to the medical attendant, while only the worst cases probably come to the notice of the ophthalmic surgeon; yet, even in our experience, this condition is by no means a rare one; such patients, on account of the pronounced eye symptoms, seeking our advice in hopes that their trouble is really due to some ocular disorder, for which we may be able to give them relief,—a vain hope usually destined to disappointment.

Such patients describe their trouble much as follow: That they are subject to attacks which commence by a sparkling spot or scintillation, which suddenly appears near the centre, or fixation point, of the field of vision of each eye, which is still present if the eyes are closed, that this rapidly enlarges till he can hardly see at all, and that the scintillating central area is encircled by a bright zigzag line (like the fortifications of Paris), and that he is then only able to see very imperfectly large objects, and that this loss of vision is often accompanied by a feeling of giddiness, and that for a variable time, from a few minutes to half an hour this condition persists, when it then rapidly passes off, the sight commencing to return at the point first affected, but that on the recovery of his vision, headache sets in, which gets worse, and goes on till he is prostrated, indeed, the visual attack is only the early symptom of an attack of migraine, which commonly but not invariably follows.

I do not think I have ever known a patient to state that the visual phenomena have lasted more than three-quarters of an hour in the most extreme cases, while ten minutes or a quarter of an hour is the time usually given. In slight attacks no headache supervenes. I do not recall, on the other hand, ever hearing a patient say that the headache preceded the visual attacks.

HOMONYMOUS HEMIANOPSIA.

It is interesting and important to note further, that in a large per centage of these cases the scintillating scotoma passes rapidly into a condition of homonymous hemianopsia; that is to say, the corresponding half of the field of vision in each eye becomes a blank. For instance, suppose it is the right half of the field of vision which becomes blank, and the attack comes on while he is reading, then the page seems to be divided into two halves by a line running through the word he is looking at, all of the print to the right hand side of this line being a blank, and the appearance remains the same whether looking with both eyes simultaneously, or if he tries looking with either eye separately while closing the companion eye; or, suppose he is talking to a friend at the time of the onset of the attack, then he notices that while he sees the left eye and left side of his friend's face, the other side is quite blank.

Some patients are not observant, and have to be educated to observe what really does take place in these attacks before their nature can be elucidated; but many find out for themselves what occurs, because, having an impression that the blindness on one side, say the right, means blindness of the right eye, they try shutting first one eye, then the other, in order to confirm their opinion, and so discover, to their amazement, that they are half blind in each eye for right-hand side of their field vision.

These attacks of hemianopsia last for ten minutes or a quarter of an hour usually, and then rapidly pass off, like the scotoma, as previously described, and rarely last three-quarters of an hour. I have once or twice had patients assert that the attack lasted quite an hour, but I fancy they were very likely not accurate observers of time. On the hemianopsia passing away headache usually supervenes, passing on to an attack of migraine. It is very important to remember that these attacks rarely last more than twenty minutes or half an hour, and never more than an hour.

I would here beg to draw your attention to the fact that in the early stage of a fainting fit, before loss of consciousness takes place, or in slight attacks not passing on to loss of consciousness, it is not uncommon for patients to complain of the occurrence of this condition of homonymous hemianopsia ; or of loss of vision, which, on enquiry, is found to be evidently one of homonymous hemianopsia, because this helps us to understand the nature of the cause of this interesting phenomenon—but in these cases it is not usually followed by headache.

What then is the cause of these attacks, and where is it the disturbance takes place? It is generally agreed that we must look to the central nervous system as the seat of disturbance. A study of the anatomy and physiology of the visual apparatus, by the aid of the diagram I have here, will enable us to see that a disturbance of function located in the central nervous system will cause a visual phenomenon at identical spots in the area of the field of vision (apparently) simultaneously in each eye. The nature of this disturbance is probably localised anæmia of visual centres, from vascular spasm, leading to loss of function.

From a study of the arrangement of the whole visual apparatus from the eyes to the visual centres, it will be obvious that a homonymous hemianopsia can only be produced by some cause affecting the central nervous apparatus *posterior* to the chiasma, of which it is absolutely pathognomonic. It is obvious that a similar cause would account for the simultaneous occurrence of identical scintillations near the fixing point in each eye, and as these phenomena are so often associated it seems reasonable to assume that both are due to the same central cause.

The evanescent and recurrent nature of these attacks point to the circulatory disturbance as the cause, while the loss of function, and the occurrence of these attacks during fainting, point to anæmia of the nerve centres as the actual condition that sets it up. The anæmia being due presumably to vasomotor spasm, *per se*, in the case of migraine; while in fainting the spasm is no doubt due to the invariable tendency of arteries to contract if the intra-vascular tension is lowered. The headache, too, that accompanies these attacks points to disturbance in the cerebral vascular system. Such disturbance in the visual cortical centre of the occipital lobe, setting up an irritation in the visual elements of that centre which, in accordance with the laws of physiology, is referred by the patient to corresponding points in the visual fields.

If this affection occurs only at long intervals, probably such patients finding the attacks evanescent, and leaving no permanent trouble will not seek advice; while if the attacks are very frequent the long history, of several previous attacks, leaving no intermediate trouble, enables the doctor to diagnose the functional character of the case. This form of migraine, like other forms of the affection, often commences early in life, and usually get less frequent as age increases, being rare over 50 years of age.

The following experience is worth recording to you as emphasizing the points it is important to bear in mind, in distinguishing between a functional temporary hemianopsia, and one due to a structural lesion.

A former patient of mine, a man aged 47, with a florid complexion and stout of habit, consulted me in 1893, giving the following history:—

The previous evening he took the chair at a meeting convened to bestow a testimonial on a respected official, and while speaking was seized with a feeling of giddiness and confusion, but managed nevertheless to complete his speech and present the testimonial; after which, feeling still unwell and his vision being affected, and a sense of giddiness persisting, he took an early opportunity to go home, when headache and vomiting having supervened, he thought well to send for his ordinary medical attendant, who expressed the opinion that he was upset by the excitement of the meeting and had got his stomach disordered, and gave him an aperient and expressed the opinion that he would be all right in the morning. However, though he was better the next day he still complained to the doctor that there was something wrong and peculiar about his vision. The doctor then advised him to consult me; which he did that day. On examining him I found no structural changes in his eyes to account for any visual defect, and ascertained that he had complete homonymous hemianopsia. The L. half of F.V. in each eye being blind even to perception of light.

I advised him to go home quietly, taking a cab to avoid exertion, and to go to bed. and get his doctor to look after him, giving him a note to give to his doctor explaining that he was suffering from an attack of homonymous hemianopsia, which clearly indicated a cerebral lesion, posterior to his chiasma; that, considering the history of his case, the sudden occurrence *without previous symptoms*, and its coming on during a state of mental excitement, I inclined to the opinion that a cerebral hæmorrhage was the cause, and that as there were no other symptoms except the visual symptoms, I thought the lesion was probably situated in the visual centre in the occipital lobe; but that, as there was no loss of consciousness at the time of occurrence or since, the hæmorrhage was probably a small one, that it was obviously most important he should be kept quiet in bed for fear of further trouble arising, and his case treated with all the gravity due to a case of cerebral hæmorrhage, and suggested that it would be well to examine his urine for the possible presence of albumin or sugar, which might explain the occurrence of hæmorrhage in a man so young; and ascertain if there was any cardiac hypertrophy to suggest the presence of Bright's disease, or any cardiac lesion which might point rather to cerebral embolism as a possible cause of his trouble, that probably a careful overhauling of his patient would enable him to arrive at a conclusion as to whether cerebral hæmorrhage, embolism, or arterial thrombosis, was the cause of the trouble; though the absence of any previous symptoms I thought militated against the view of its being due to thrombosis.

The doctor, and patient's friends, on learning that his trouble was not due to any ocular disease, but was, in my opinion, indicative of a cerebral lesion, very wisely and properly called in a physician, who, after seeing him, expressed his opinion that his attack was one of "functional hemianopsia of migraine," and accounted for a trace of sugar which was found in the urine as probably temporary and due to the cerebral excitement caused by the meeting. This opinion was communicated to me by the family doctor, who hoped I had taken altogether too serious a view of the case, and who could not think it likely that a hæmorrhage could have taken place without causing loss of consciousness, and without any other subsequent symptom than the defect in vision. To this I replied, that having previously seen cases where a cerebral hæmorrhage had certainly taken place without causing loss of consciousness, and also cases of undoubted cerebral hæmorrhage where no defect except hemianopsia was subsequently to be discovered, I still adhered to my opinion, and that while I had great respect for the physician's knowledge of general medicine, it was clear to me that his conception of functional hemianopsia of migraine was entirely erroneous, such attacks rarely lasting for longer than half an hour at the outside, and referred him to Gower's work as an authority on this point on which he might rely, and entreated him to keep his patient quiet if he would avoid a catastrophe.

No further trouble arising, the patient in due course resumed his occupation, though somewhat embarrassed by the persisting hemianopsia.

In 1898, some five years later, this patient again consulted me; this time for severe iritis in one eye, suggestive of the diabetic type, and I found the hemianopsia still present in each eye, though no longer complete, and on examining his urine it had a specific gravity of 1042, sugar was present in large quantities, but no albumin.

The patient then informed me that he had for some twelve months been under the treatment of a medical man in the country for diabetes, discovered by this gentleman to exist, he having left Birmingham since he consulted me for his previous trouble.

If my friend, the physician, had only clearly appreciated the temporary character of functional hemianopsia, and had paid more attention to presence of sugar in the urine in this case, he would probably not have disagreed with my view of the hemianopsia being due to hæmorrhage, and the diabetes would have been discovered at a much earlier stage, while had not the family doctor been sufficiently impressed by my views, and kept his patient quiet, who knows but what a serious attack of cerebral hæmorrhage might not have occurred.

The following then are the salient points to bear in mind about Functional hemianopsia:—That the attacks are so evanescent, it must be *very rare* for the hemianopsia to be found present by the doctor when the patient consults him; that the attacks are very recurrent, often extending over years, but that between the attacks vision is good.

A first attack in a patient over forty should be investigated with care, and received with suspicion. In any case, certainly in a doubtful one, the doctor should assure himself of the absence of any eye disease; also, if in any doubt he will be wise to assure himself of the absence of kidney disease, or cerebral disease which might cause attacks of dimness which might be mistaken for this affection.

TREATMENT.

This resolves itself into the general treatment of migraine for the most part, often a very unsatisfactory matter, and hardly one for me to deal with. I may, however, say that it is important to ascertain the exciting causes of attack, and if possible, to avoid them.

A timely attention to the premonitory symptoms of extreme hunger, or constipation, by giving a purgative, will often ward off, or mitigate an attack; and for this purpose, saline aperients, specially one containing a large percentage of sulphate of soda, seems the best. For this purpose I am fond of prescribing Carlsbad salt, with some sulphate of soda added. Where over-exertion, or excitement, or fatigue seem to predispose to attack, this should be avoided; where sight-seeing, such as going to picture galleries causes attacks, this should be altogether avoided, or only indulged in for a very short period at a time, it being better to pay two short visits than one long one. If there is some intolerance of light, as is often the case in these patients, smoke glass should be worn whenever the least necessity for them arises. In all cases in which the use of the eyes seems to bring on an attack, as in cases occurring after sight-seeing, it is well to very carefully examine the eyes for any possible defect; and if any astigmatism or other optical defect, or any want of muscular balance is present, endeavours should be made to correct these by means of glasses; as in many cases, excited by occular strain, a great reduction in the frequency of attacks often occurs if some optical defect is corrected by means of glasses, or some want of muscular balance is relieved by suitable prismatic glasses. It is sometimes found by patients who suffer after railway journeys, that they suffer less if they read while travelling. This seems paradoxical, but anyone who will watch his opposite neighbour while he is looking out of the window of a travelling railway carriage, and note the rapid oscillations of his eyes, as the objects looked at pass by, will easily understand that this may be more disturbing to his visual apparatus than following the words on a page; probably, it is better for such patients to travel with closed eyes, sleeping if possible. Every care should be taken to maintain to the best the general health and vigour of such patients.

TEMPORARY MONOCULAR BLINDNESS.

I now wish to say a few words about another failure of vision which is often confused with that just described, namely, temporary blindness in one eye, and often some care and cross examining of the patient is required before one can satisfy oneself as to whether this condition, or that which we have just considered, is what the patient suffered from; but many patients will tell you most distinctly that it was a blindness of one eye, because they shut the companion eye and found they could not see with the eye affected, while vision with the other eye was unimpaired.

These attacks of monocular blindness usually last only a few moments, or from ten minutes to half an hour at most, though very occasionally the patient will state that they lasted an hour or more, when the sight rapidly returns. I have recently seen a patient who declared her eye was blind for over two hours. On examination the eye will be found quite normal in all respects, vision being normal, and if the extent of the F.V. is taken with the perimeter it will also be found to be normal. Some patients will aver that these failures of vision are of almost daily occurrence, while some will even state that they have several in one day occasionally. Such patients are usually young women, in whom such failures of vision are exceedingly common, specially in those that are anæmic. Occasionally such attacks are accompanied by a feeling of faintness or giddiness, but often by no other sign than the loss of vision, and usually this is not followed by headache or any other symptom.

The fact that many patients suffer in this way for several years, during which many score or more of attacks have occurred without any permanent damage to vision, has seemed to me to justify my placing them under the category of functional disorders, though some facts to be presently mentioned make it always reasonable to suspect that there may be a physical basis of disease in such cases.

This loss of vision appears to be due to a failure of retinal circulation from vaso-motor spasm of the retinal artery, and such contraction has been actually observed by Benson* while examining a patient during an attack to which he had for some time been subject. In some the failure of vision would seem to be preceded by faintness, which, by lowering the general vascular tension, facilitates the failure of retinal circulation from vaso-motor contraction.

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* Trans. International Ophthalmic Congress.

Occasionally, such patients seek advice because such a failure, unlike many previous attacks, has not been followed by recovery. On examining the eye ophthalmoscopically in such a case, we find all the signs of a block in the artery, with cessation of retinal circulation and œdema of the retina. Such sudden blocking of the artery, up to recent years, was almost invariably attributed to embolism of the central artery of the retina, but there is now a consensus of opinion that it is to thrombosis, rather than embolism, that this blocking of the artery is usually due, and in any case of such blocking, where there is a history of previous attacks of temporary loss of vision in one eye, this is taken as strong evidence in favour of thrombosis rather than embolism.

In these cases it would seem that the lumen of the artery is lessened by mesarteritis or endarteritis in the artery, so that in any temporary failure in the force of the arterial circulation, the circulation in the retinal artery is, in consequence of the diminished lumen of the artery, lowered below the point required to maintain the visual function, and blindness ensues; while the local arterial disease predisposes to local thrombosis which occurs in some attacks where the failure of circulation has been rather more severe or prolonged than usual.

It would seem as though the sharp bend taken by the artery as it winds over the disc to spread out in the retina predisposes it to obstruction at this point, while the intraocular tension assists to offer some obstacle to the entrance here of blood into the eye at each cardiac impulse. The fact that when the vessel does get blocked it is usually found at the point where it enters the eye suggests that the anatomical and physiological condition at this point predispose it to arteritis and thrombosis here.

Prognosis.—This is favourable in the young, where arterial spasm alone is the cause usually; but coming on in middle, and past middle life, it is more grave, as suggesting endarteritis, and a tendency to thrombosis in the artery, with permanent loss of vision in consequence.

Treatment.—In the young a course of iron, with nitroglycerine and strychnine added, seems indicated; but in middle life, if there is a history of syphilis, potass iodide, and perhaps mercury, should be given; while if there is a gouty history the usual attention to diet, etc., and an occasional saline aperient, with free drinking of hot water, may be useful, and in these cases I think a course of potass iodide and soda salicylat is useful.

NEURASTHENIC ASTHENOPIA.

In this affection the patient complains that the eyes soon tire, that in reading the letters run into one another, and the effort causes aching in the eyes, with lachrymation, and there is generally intolerance of light, though there may be no optical defect to account for these symptoms, or if there is the symptoms continue even after the most perfect correction of any optical error by glasses; such patients often seeking advice of nearly all the oculists in their neighbourhood, in hopes of being able to get glasses to relieve their eye troubles, and the headache to which they give rise. There are, too, complaints of pain in the eyes, which may be tender to touch, and pain at the back of the eyes.

If the vision is tested with types it will be found normal at first, but can only be maintained for a few moments, and there will generally be symptoms of general neurasthenia.

If the F.V. is tested in such a case we find it contracted concentrically and not unequally, as in atrophy of the optic nerves, or structural disease of the eye—and if we prolong the taking of the F.V. we find it gets smaller as time goes on or what is known as a fatigue F.V. is obtained.

One way to do this, and which I prefer, though there are other methods, is to very tediously take the F.V. on a perimeter till we come round to the point at which we started, when, if we still go round the circle, we shall find that the F.V. is now smaller than when first taken at same point, and so we get a spiral chart, or fatigue chart, the first circle overlapping the second.

This fatigue F.V. is most characteristic of this condition. If we take a chart for red and green, we shall find that though they are a little smaller than normal it is not much, and they follow the normal order—green being smaller than red. This concentric contraction of the F.V., or fatigue F.V. are pathognomonic of this condition.

Treatment.—The most important thing is to treat the general condition of the patient, promoting vigour and nutrition in every way, and avoiding fatigue. Dark glasses often give relief to the photophobia, and if any optical defect is present it must be corrected by proper glasses, which often give more relief if tinted slightly blue, and if there is any want of convergent power a prism should be added, while cocaine drops often give relief to the ocular pains and discomfort.

Prognosis.—Good as regards ultimate effects on vision, but bad as regards the duration of the trouble, some such patients so suffering for years.

TRAUMATIC AMBLYOPIA.

Now what is sometimes described as traumatic, or hysterotraumatic amblyopia, is apparently identical with the foregoing, only that there has been a history of injury to start these nervous phenomena, which may be very much more pronounced, and even equal those seen in hysteria, so that neurasthenic asthenopia, traumatic amblyopia, and hysterical amblyopia may be considered as degrees of the same affection. These cases of traumatic amblyopia are those that so often add to lawyers' fees, and detract from the reputation of medical men, but I do not think it necessary or useful to pursue them further here.

HYSTERICAL AMBLYOPIA.

This too, may be considered as an extra degree of neurasthenic affection, as the resemblance in kind is so great. Here, the inability to see may go altogether beyond an inability to read and amount to considerable amblyopia, usually one eye being much more blind than the other, though it is more than doubtful if it is ever quite blind as is often asserted by the patient, there being *it may be only a very small area in the centre of the F V.* still retaining its function.

If the F.V. is taken in these cases, it may be found contracted almost to within 10 or 5 degrees of the fixing point, but always concentrically as before, and not unequally as in diseases of a structural kind affecting the nerves; and if the F.V. is taken for colours, there is still found to be the normal relation of colours to one another, or if there is a departure, it will probably be found that the F.V. for red is as large or larger than that for blue, or even white, and not proportionally much reduced as in atrophy of the optic nerve. Such patients, apparently, having rather a predilection for red, and this kind of chart is pathognomonic of this affection and will serve to identify it in most cases of doubt.

In these cases spasm of the orbicular muscle often occurs, such patients being brought in blind, with the eyes closed; or there is often spasm of accommodation, myopia being found by the shadow test in the dark room, and they will often have vision much improved by concave glasses, though it is not maintained. Spasm of convergence also occurs. The spasm of convergence causing diplopia, while spasm of accommodation will cause monocular diplopia, about which much needless mystery has been made, also the curious symptoms micropsia and macropsia, these symptoms all being sufficiently explained by the optical conditions. In most cases there is a marked difference in the size of the two F.V.'s, and in some this is most extremely contracted in one eye, and but little in the other. In cases where one eye is said to be blind the placing of a plane glass before the eye, or better still a concave one of 3 or 4 d., where spasmodic myopia has been found to be present, by the shadow test, will often enable the patient to see. This need not be construed as evidence of malingering, but rather that the effect of help, by correcting the myopia, or suggestion of help, has assisted the patient to withhold the inhibition of vision, which is psychical in origin.

Hemianesthesia, or other symptom of hysteria, will probably be present. Hemianesthesia being on the same side as the supposed blind eye or one most affected, it is noteworthy that these patients never have an hemianopic F.V. The absence of any visible disease of the eye makes the diagnosis complete.

This visual defect is regarded by all who have paid attention to this disorder as due to a central nervous disturbance, all the facts according with the view of a central origin, and in order to explain the fact that it never conforms to the type of hemianopsia so generally found in structural disease of the cerebrum, it is assumed that there is a second decussion of the fibres of the optic tract, probably about the neighbourhood of the corpora quadrigemmina, by which the two half F.V. are reunited, these ending in a higher psychical visual centre located in the neighbourhood of the angular gyrus, which thus becomes a visual centre for the eye on the opposite side, and also to some extent for the same side also; and that the suppression of the function of this centre leads to the loss of vision in the opposite eye, together with the contraction of the F.V. of the eye on the same side. This view is repudiated by many, but is supported by Gowers by some cases of crossed amblyopia in structural cerebral disease, and by experiments on monkeys made by Ferrier, and those who would wish to more fully study this theory can not do better than read Dr. Gowers' Bowman lecture at the Ophthalmic Society.*

Treatment is comprised in the treatment of hysteria generally, but I know nothing better than a smart application of the continuous current, one pole at the nape of the neck, and the other over the closed eyes and around the orbits, to induce the acute cases, with orbicular spasm, to open their eyes and see; but, in the absence of this, moistening the skin over the eyebrows, and rubbing a solid stick of nitrate of silver on, answers well, or a blister or some other form of counter-irritation may suffice.

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* Trans. Ophthalmological Soc., Vol. XV.

It is remarkable that painful stimulation of the skin in these cases is at once followed by enlargement of the F.V.

It only remains for me now to thank you for your kind and patient attention to my lecture, and in doing so to say that I am aware how very sketchy and fragmentary it has been; but time is inexorable, otherwise there is scarcely any limit to the extent to which such a theme might be extended and elaborated, and it has, I assure you, been even more difficult to know what not to say, than what to say, so complex are some of the matters presented for consideration by these curious and intricate functional disorders, but I trust I have said sufficient to explain their salient phenomena to you.

LEUKÆMIA.*

BY T. LAW WEBB, M.B., B.CH. BIRM.

Gentlemen,

I have thought that a short paper on the pathology and clinical history of leukæmia might not be unacceptable to this Section, especially since improved methods of blood examination have enabled the diagnosis of this not very rare disease to be made with ease and certainty. Moreover, several cases have recently been under treatment in the Infirmary (one of which, Dr. Gardner's, you have had an opportunity of examining). I am also able to show you some very striking preparations of the blood in four of these, and also of blood taken from a patient of Dr. Lytle, and from one of my own cases.

Leukæmia (or leucocythæmia) is a disease in which the white or colourless cells of the blood are greatly in excess. This definition, you will observe, takes it for granted that a microscopical examination of the blood has been made, and implies that such examination is the only means we have at present for making an accurate diagnosis in cases of this disease. It is true that leukæmia is usually accompanied by enormous enlargement of the spleen, by disease of the bone marrow, sometimes by great swelling of the lymph-glands, or increase in the size of the liver. But these organs are subject to enlargement from so many causes (some of which will readily occur to your minds), that it is unsafe to conclude that the case is one of leukæmia because such a condition is present, even when accompanied by other symptoms which I shall mention later on. Besides, there is no need to insist upon a careful study of the clinical characteristics of leukæmia for the purpose of enabling the practitioner to make the diagnosis more readily. A single microscopical examination of a dried blood-film properly stained, settles the question absolutely, and at once. Indeed the study of such a blood-film, without having seen the patient at all, decides whether leukæmia is present or not. Such precision has been possible only of late years, in fact since Ehrlich and his pupils so greatly improved the technique of blood examinations.

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* A paper read before the Clinical and Pathological Section of the Shropshire and Mid-Wales Branch of the British Medical Association, on Dec. 10th, 1901.

Previously to this, when staining was unknown, any moderate increase in the number of white blood-cells was called "leucocytosis," whilst a more marked increase, such as raised the proportion of white cells to red cells from one in 500 to one in 50, was deemed proof of the existence of the graver condition called "leucocythæmia," or "leukæmia."

Now a moderate increase in certain of the white cells of the blood, or in other words a "leucocytosis," is often a physiological process, and occurs normally during digestion, in pregnancy, or after a cold bath. Pathologically, it is also an almost invariable accompaniment of nearly all inflammatory processes, such as abscess, fevers, pneumonia, etc. Formerly, therefore, when a considerable increase of leucocytes was found, for lack of a correct technique it was often impossible to decide whether this was to be considered evidence of a leucocytosis, or of a commencing leukæmia. It was also impossible to say whether the leukæmia, when present, was of lymphatic origin, or due chiefly to an influx of cells from the bone marrow (that is, whether the leukæmia was lymphatic or myelogenic). Even Virchow, acute observer as he was, promulgated the erroneous doctrine that leucocytosis was the result of an influx into the blood of cells from the lymph-glands. After his discovery of leucocythæmia and leucocytosis in 1845, progress in our knowledge of the leucocytes was soon at a standstill, and remained so for more than 30 years; in fact as long as observers restricted themselves to the examination of fresh unstained blood.

The recognition of the various kinds of leucocytes is only possible by staining with a neutral polychromatic combination of stains. Cell-elements, such as nuclei, granules, etc., which have an affinity for basic dyes (such as methyl blue), stain in these neutral mixtures purely in the colour of the basic dye. Other elements pick out the acid dye (such as Eosin, in a Methyl Blue,—Eosin combination, as "Jenner's stain"), whilst those cells which have an equal affinity for acid and basic dyes, attract the neutral compound colour as such, and therefore, stain in the mixed colour. (With Jenner's stain a reddish purple.) If a dried film of normal blood is stained with borax methyl blue alone, the white cells are picked out very distinctly, as their nuclei stain dark blue, whilst all the red cells are coloured a pale green. We are able to distinguish in this way four kinds of colourless cells, viz. :—

1. Polynuclear leucocytes - - - -	70	per cent.
2. Lymphocytes - - - - - -	22	,,
3. Large mononuclear leucocytes - - -	1	,,
And similar forms with indented nucleus, which have been called "transitional" -	3	,,
And with Jenner's stain, two other kinds can be recognised, viz :—		
4. Eosinophil leucocytes - - - -	3·5	,,
5. Mast cells - - - - - -	0.5	,,
	100	

Taking all the kinds of white cells together, normal blood contains about 7,000 to 10,000 per cubic millimetre, or about 1 to 500 red cells. In leucocytosis there may be from 18,000 to 35,000 leucocytes per cubic millimetre or more; and in all instances where this is due to inflammatory reaction, hæmorrhage, etc, it is the polynuclear neutrophil cells which are increased in numbers. These are the cells which wander from the vessels in the formation of pus, being able to effect this migration by means of their amœboid movements. The lymphocytes are not endowed with the power of locomotion, and when found in the blood in great numbers, are present not through any vital activity of their own, but are swept into the bloodstream through the lymphatics mechanically, being present in abnormal numbers in the lymph channels as the result of an over-production of lymphocytes in the lymph glands and other lymphoid tissue. That form of leucocytosis in which chiefly lymph cells are found, has therefore been called passive leucocytosis, and an extreme degree of this condition constitutes lymphatic leukæmia, a case of which, through the kindness of Dr. Lytle, I have been able to show you this evening.

Active leucocytosis, on the other hand, can, of course, only be produced by cells which have the power of wandering from the blood-forming organs into the blood. The cells which can thus migrate into the blood, can also wander from the blood into the tissues, producing each its own specific form of pus or exudation. The lymph cells as aforesaid, not being motile, are unable to leave the vessels, and therefore a suppuration consisting of lymph cells alone does not occur.

Active leucocytosis has been divided into the following groups:—*(a)* Polynuclear leucocytosis, which may be either polynuclear neutrophil leucocytosis, or polynuclear eosinophil leucocytosis; *(b)* mixed leucocytosis, in which both the above forms of leucocytosis occur, plus an enormous influx of "myelocytes" (mono-nuclear granular elements, derived from the bone-marrow) and other abnormal cell-elements.

It would lead me too far afield were I to speak here of leucocytosis in general. But I must remind you that in inflammatory disease, and certain other conditions due to toxins, bacterial products, or certain chemical substances, the swarming of the leucocytes into the blood is due to what has been called "chemiotaxis." By this we mean the power possessed by chemical substances, toxins, etc., to attract the polynuclear neutrophil or eosinophil cells in great numbers. These, leaving the bone-marrow, where they are produced and stored, issue forth into the blood in unusual profusion, constituting the usual reactionary leucocytosis. The value of this reaction you know well. The white cells either act as phagocytes and devour the bacteria or other irritant, or, becoming themselves disintegrated, set free fluids which exert a bactericidal influence, or act as anti-toxines. Not every toxin or bacterial product is able to attract the polynuclear leucocytes, for some actually exert a repelling power upon them, which has been named "negative chemiotaxis." Thus in measles, typhoid, and uncomplicated tubercle there is no neutrophil leucocytosis. And in certain diseases, such as pemphigus and trichinosis the leucocytosis consists almost entirely of eosinophil cells, the ordinary neutrophil polynuclears being absent. The poison (whatever it is) of pemphigus seems to have a negative chemiotactic influence upon the ordinary polynuclears, but attracts the eosinophils powerfully, producing in the blood a leucocytosis consisting chiefly of eosinophils, or an "eosinophilia."

The fluid contents of the bullæ in a case of pemphigus was found by Neusser to be an accumulation of eosinophil leucocytes, in fact eosinophil pus. Yet when in a case of pemphigus, this observer produced an ordinary inflammatory focus experimentally by means of a blister, the leucocytosis which followed was of the ordinary polynuclear kind, and the cells in the blister fluid were also polynuclear neutrophils, not a single eosinophil being found.

Having considered briefly the two kinds of polynuclear leucocytosis, namely, the neutrophil and the eosinophil, we are better able to appreciate the extraordinary condition known as leukæmia in which we find an enormous "mixed leucocytosis" of an astonishing extent. Here we have polynuclear neutrophil cells, and eosinophils in great numbers, but besides these there are "myelocytes" (or large mono-nuclear neutrophil granular cells), large mono-nuclear eosinophils, mast cells, and immature forms. In no other known disease is there such a blood-picture as this. The diagrams I show you are drawn from nature, and represent actual microscope fields The first shows prominently the large myelocytes or bone marrow cells which characterize the disease, and which may constitute 50 per cent. of the total leucocytosis. It has been proposed by some writers to call this condition "myelocytæmia," but as the myelocytes are not the only white cell elements which are in excess, it seems better to keep to the term "myelogenic leukæmia."

The total leucocytic count reaches on an average nearly 500,000 per cubic millimetre, and this figure is often surpassed.

The Myelocytes = 50 per cent. or 250,000 per cubic millimetre.
Polynuclear neutrophils = 40 ,, ,, 200,000 ,, ,,
Polynuclear eosinophils = 3 ,, ,, 15,000 ,, ,,
(Sometimes reaching 35,000 or more.)
Mast cells = 2 per cent. or 10,000 per cubic millmetre.

Dwarf and transitional forms of each of the various kinds of leucocyte occur, and also nucleated red corpuscles or normoblasts. Such then is the condition of the blood in myelogenic leukæmia. I think it is scarcely possible to make a wrong diagnosis, or to confuse this with any other form of leucocytosis, or leucocythæmia, if a correct technique is used in examining the blood. There are only two cases in which an error might occur, viz., in lymphatic leukæmia of the acute kind, where large mononuclear cells abound, but are free from granules, so that with ordinary care they should not be mistaken for myelocytes, and in cancer of the bone marrow. In this latter, neutrophil myelocytes in large numbers are found, also nucleated red cells, and, in fact, most of the appearances seen in myelogenic leukæmia. *But the eosinophils are absent*, no doubt from negative chemiotaxis.

Ehrlich therefore rightly insists on the diagnostic value of the presence of eosinophils and mast cells in leukæmia.

As to the etiology of myelogenic leukæmia, I fear we must confess that this is still obscure. Judging from analogy, and from a summary of the facts I have placed before you, I think it will be best, for the present, to consider it the result of a severe reaction of the organism to some poison or irritant unknown, a leucocytosis in which not only the regular army of ordinary leucocytes is called out, but also the reserves, in the shape of eosinophils, myelocytes, and mast cells! I ought to mention that Löwit has found in the myelocytes plasmodial bodies; but his results have not, so far as I am aware, been confirmed.

I have said nothing yet of the clinical course of the disease. In three cases of my own, the great muscular weakness and prostration, the distressing dyspnœa on the slightest exertion, and the enormous enlargement of the spleen, were the prominent symptoms. In one case, subcutaneous and intermuscular hæmorrhages were a troublesome and painful complication. In all, gastric attacks occurred at intervals, with vomiting, cerebral symptoms, and diarrhœa. One case ran a very rapid course, ending in coma at the termination of the third month. The other cases had a duration of about eighteen months or two years. In one case large doses of arsenic were given, and the patient made a partial recovery, which, however, was of brief duration, a fatal relapse taking place very speedily.

Dr. McClintock has related to you the very interesting details of Dr. Gardner's case. There is no doubt as to the nature of the blood disease in this man (as you may satisfy yourselves by inspection of the blood-films). Yet the symptoms, so far, have been extremely mild. He says that there is nothing the matter with him, but that he is very weak. Probably we have in this case a very early stage of leukæmia. It is the more worthy of study, as we usually only see the disease when well advanced.

Of the clinical course of acute lymphatic leukæmia I can say little, as I have not hitherto met with a case. It is characterized by its rapid course, small amount of splenic enlargement, and tendency to petechiæ and to a general hæmorrhagic diathesis. It occurs most frequently in young subjects, and is very rapidly fatal, the duration of the disease being not more than two or three months.

Editorial Notice.—CLINICAL LECTURES.

The Editors have pleasure in announcing that they hope to publish a series of Clinical Lectures during the course of the present year. Promises of co-operation have been received from many of the teachers in the Birmingham Medical School, and as far as possible a Lecture will be published every month.

MEDICAL ABSTRACTS.

EXOPHTHALMIC GOITRE.

BY JAMES W. RUSSELL, M A., M D., M.R.C.P.

PATHOLOGY.

Fonctions du Corps Thyroide. Pathogénie du Goitre Exophtalmique. Par le Dr. Gabriel Gauthier. (*Révue de Médecine*, Mars, 1900.)

The Pathogeny of Exophthalmic Goitre. By Prof. E. Gley, M.D. (*British Medical Journal*, Sep. 21st, 1901.).

The Pathology of Exophthalmic Goitre. By Walter Edmunds, F.R.C.S. (*British Medical Journal*, Sep. 21, 1901.)

Diseases of the Thyroid Gland By George R. Murray, M.A., M.D., F.R.C.P. Part I. (H. K. Lewis, 1900.)

The Erasmus Wilson Lectures on the Pathology and Diseases of the Thyroid Gland. By Walter Edmunds, F.R.C.S. (*Lancet*, May 11th, 18th, and 25th, 1901.)

Recent researches on the functions and pathology of the thyroid gland have thrown not a little light upon the nature of exophthalmic goitre. The old views that the disease was due to a primary cardiac affection or to a neurosis have long been abandoned, and it would seem that the more modern belief in the dependence of the symptoms on an excessive secretion of normal thyroid juice is likely to follow in their wake. This point, however, is one on which opinions are still much divided, and somewhat opposite conclusions are arrived at in the papers quoted above.

The arguments in favour of the hypersecretion theory are ably summed up by Mr. Walter Edmunds in his third Erasmus Wilson Lecture. In the first place, not only is the thyroid enlarged in Graves' disease, but it is seen microscopically to be in a state of active secretion (though this statement, as will be shown below, is denied by Prof. Gauthier). Thus, the vesicles, instead of being round or square in section, are branched and stellate, the lining membrane is folded on itself, and the secreting cells instead of being cubical are columnar. The colloid substance, however, has partly or wholly disappeared, and its place is taken by a badly-staining mucous secretion. Secondly, there is the most marked contrast between the symptoms of myxœdema, due to absence of thyroid secretion, and those of exophthalmic goitre. Thirdly, Mr. Edmunds claims that most of the symptoms of this disease may be produced by the administration of thyroid extract; and he quotes cases in which such administration has produced palpitaton, flushing, rise of temperature, sensations of heat, perspiration, tremors, mental agitation, emaciation, and occasionally a certain degree of exophthalmos. Fourthly, certain cases of ordinary goitre eventually develope symptoms of Graves' disease—an argument which, however, appears to tell at least as strongly against as for the proposition. Fifthly, the excision of part of the goitre is often followed by amelioration or cessation of symptoms—again an argument which may be used on the other side of the controversy. Further support of the hyper-secretion theory is to be found in Mr. Edmunds' experiments recorded in an earlier lecture, in which he found that excision of the thyroid gland and the parathyroids caused retraction of the eyeball and narrowing of the palpebral fissure, and that total parathyroidectomy gave rise to the same symptoms, absence of the secretion thus tending to produce the opposite condition of the eye from that which exists in exophthalmic goitre. In a few cases, however, where the animals survived the operation for some time, and especially those in which the parathyroids were interfered with, some exophthalmos with widening of the fissure subsequently developed.

There is thus undoubtedly at first sight a strong case in favour of the view that a hypersecretion on the part of the thyroid gland is the cause of the symptoms of Graves' disease.

Yet Prof. Gauthier and Prof. Gley, together with other authorities, are strongly opposed to this theory. These observers deny, in the first place, that a true condition of exophthalmic goitre has ever been produced by the administration of thyroid extract. Secondly, Prof. Gauthier remarks upon the difficulty of believing that a condition of cachexia with fever could be due to a mere excess of a normal secretion. Thirdly, the same writer denies that any sign of hyperplasia is to be found in the thyroid in exophthalmic goitre; and his description of the microscopic appearances is most curiously opposed to that given by Mr. Edmunds. Fourthly, the contrast between the symptoms of Graves' disease and those of myxœdema only holds good for the chronic form of the latter disease, and fails entirely in the acute disorder produced in animals by excision of the parathyroid glands. And fifthly, the symptoms caused by the operation just mentioned, and which are due to deficiency of secretion, have several points in common with those of exophthalmic goitre.

These are merely some of the objections which are urged against the hyper-secretion theory. The more positive views of the two French writers depend upon the differences recently shown to exist between the functions of the thyroid gland proper and those of the parathyroids. The importance of these differences is also recognised by Mr. Edmunds. A brief account of the facts at present established on this point may here be given. This account is taken from Prof. Gley's paper mentioned in the references preceding this article, from Mr. Walter Edmund's lectures, and from the book of Dr. Murray.

The existence of four parathyroid glands in close anatomical association with the thyroid has been known for a considerable time, but only recently has any endeavour been made to discriminate between the functions of the two structures. In the human subject the parathyroids are embedded in and inseparable from the thyroid itself. There is one anterior and inferior, and one posterior and superior to each thyroid lobe. In many animals the parathyroids are much more separable from the main gland, and it is in these that the nature of their functions has been worked out. In structure they consist entirely of cells, and contained no vesicles and no colloid material, or at most a mere trace.

Although the results obtained by excision are by no means uniform, and striking variations are not infrequently observed, yet the following facts may be stated as on the whole established: If in a dog the four parathyroids be removed and the thyroid gland itself left, the animal suffers from symptoms identical with those produced by removal of the whole thyroid apparatus. These commence about forty-eight hours after the operation with fibrillary twitching of the muscles, followed a day or two later by a severe attack of general convulsions. The animal becomes unable to stand, and its limbs are in a state of spastic paralysis; its respirations rise to 200 or more per minute, and the temperature is raised several degrees. This attack lasts for about an hour and then passes off, so that the next day no abnormal symptoms are noticed. The convulsions may recur, and in the course of the next day or two the animal becomes listless and feeble, its hair falls out, and there is difficulty in maintaining equilibrium, followed by rigidity and paralysis of the hind legs. Trophic symptoms then develope in the shape of ulcers on the skin, conjunctivitis and keratitis; the temperature becomes subnormal; and the animal dies about the fifth day.

If the parathyroids and thyroid of one side be excised, leaving those of the opposite side intact. no symptoms are produced; but if at a later period the remaining structures be also removed, the same results follow. If, on the other hand, the thyroid proper be excised, leaving the parathyroids intact, health remains unimpaired, and removal of two or even three parathyroids alone is similarly harmless in its effects. It appears to be doubtful whether removal of the parathyroids alone or total thyroidectomy with parathyroidectomy is the more rapidly fatal operation. The effects produced in cats and rabbits by such operations are similar to those seen in dogs.

The microscopical changes observed in the structures left after partial operations have an important bearing on the questions under discussion. If the thyroid and parathyroids of one side, together with one parathyroid and a part of the thyroid of the other side, be excised, and the remaining portion of the thyroid left *in situ* be subsequently examined, the vesicles are found to be enlarged and branched, the cubical cells have become columnar, and the colloid material is replaced by a badly-staining mucous secretion. These appearances are identical with those described by Mr. Edmunds in the thyroid of exophthalmic goitre. Again, if, as sometimes happens, an animal survives the operation of total parathyroidectomy, exactly the same changes take place. It would thus appear that removal of the parathyroids causes a hyperplasia of the thyroid structure, together with a marked alteration in the contents of the vesicles; and that the same condition is present in cases of exophthalmic goitre. The alteration in the composition of the contents of the vesicles in Graves' disease is further demonstrated by the fact, established by Prof. Gley, that the thyroid in this condition contains about ten times less iodine than the normal structure.

From these facts Professor Gley draws the conclusion that there is a close connection between the functions of the thyroid and parathyroids, and that the original cause of the symptoms of exophthalmic goitre is a deficiency or alteration, rather than an excess, of secretion. Professor Gauthier goes further, and adopts the theory of Renaut to the effect that the lymphatics of the thyroid are compressed and obliterated by an interstitial cirrhosis, and that a suppression of secreting function with alteration of structure arises in consequence. Prof, Gauthier acknowledges, however, the part played by the parathyroids in the origination of the mischief. He developes this theory at considerable length, and enters into many associated questions; but these are somewhat too complicated for reproduction here.

According to this view the symptoms of exophthalmic goitre must be attributed to the absorption of a poison, in the shape of the altered contents of the thyroid vesicles, consequent on an assumed lesion of the parathyroids. The good effects of removal of part of the thyroid apparatus would, presumably, be explained on this supposition by the diminution in the quantity of the poison manufactured. The view of an acute poisoning is further supported by Mr. Edmunds' later communication to the British Medical Association, in which he recorded changes in the cord and medulla in a fatal case of Graves' disease closely resembling those described by Dr. Mott as occurring in some forms of acute toxæmia.

To sum up: although a strong case can at first sight be made out for the view that Graves' disease is due to excessive secretion of normal thyroid juice, yet there are many difficulties in the way of its acceptance, and not a few of the facts on which it rests are capable of explanation on other grounds. Present evidence points more strongly to an altered and vitiated secretion as the cause of the symptoms, and certain facts suggest that this alteration is immediately due to a lesion of the parathyroid glands.

In conclusion, it is worth while to point out that the experiments recorded seem to point to a lesion of the parathyroids as the ultimate cause of both exophthalmic goitre and myxœdema. If this proves to be true, the difference in the results produced must probably be accounted for by the difference in the state of the thyroid gland proper. On the one hand, this gland is in a state of increased activity, though the products of its secretion are profoundly altered: on the other, the whole thyroid apparatus is simultaneously atrophied. In the latter case, therefore, the symptoms would be due to complete absence of thyroid secretion; in the former, to poisoning from absorption of a vitiated material.

No reference is made in any of the papers on which this article is based to the theory of an antitoxic action of the thyroid juice. This theory, for which there was never any great amount to be said, appears now to be finally rejected.

Mr. Edmunds further deals in his lectures with the question of the supposed nervous origin of the secretory disturbance. After excising a length of the superior laryngeal nerve and also of the vago-sympathetic at the level of the thyroid on one side, and removing the thyroid and parathyroids of the opposite side, three out of nine animals operated on died in from one to three days, and four of the remainder developed symptoms similar to those caused by the removal of the whole thyroid apparatus. The remaining portions of the thyroid were subsequently examined in five cases. The colloid material had disappeared from all five; but in four the secreting cells had multiplied into the cavity of the vesicles, whilst in the fifth, which was greatly enlarged, there was a growth of young thyroid tissue between the vesicles. It would therefore appear that the thyroid secretion is under the control of the nervous system, though the consequent changes in the thyroid resulting from operative interference with the secreting nerves were not identical with those observed after removal of the thyroids and parathyroids.

ETIOLOGY AND SYMPTOMS.

A Case of Graves' Disease with Extreme Emaciation. By W. P. Herringham, M.D. (*St. Bartholomew's Hospital Reports, Vol. xxv.*)

The Symptoms Immediately Preceding Death from Exophthalmic Goitre. By A. J. Cleveland, M.D. (*Guy's Hospital Reports, Vol lv.*)

Dr. J. Popoff. *Neurologisches Centralblatt*, April 15th, 1900. (Abstracted in *The Lancet*, July 7th, 1900.)

Dr. Leonard Guthrie. *Proceedings of the Harveian Society*, Jan. 3rd, 1901. (*Lancet*, Jan. 12th, 1901.)

Dr. Dupré. *Académie de Médecine*, 8 Mai, 1900. (*Le Progrès Médical*, 12 Mai, 1900,)

After reporting a case of exophthalmic goitre with extreme emaciation, Dr. Herringham analyses a series of sixty-two cases taken from the records of St. Bartholomew's Hospital. Six of the patients were males. Twelve of the female patients had had rheumatism or rheumatic fever, and six had organic heart disease. In eight cases some nervous malady was or had been present: epilepsy twice and hysteria three times.. Two of the patients were suffering from phthisis. The families showed a high percentage of disease. In thirty, rheumatism had occurred thrice, heart disease thrice, insanity seven times, and phthisis fourteen times. There was a family history of goitre in four cases, and in one of these the disorder was apparently Graves' disease. Of the six men, two had had rheumatism, one had epilepsy. Two of the families showed phthisis and one insanity.

Twenty-six cases had been followed up. Seven of these patients were dead; two having died of diarrhœa and emaciation, and one in an epileptic fit. Nine patients had improved, one had recovered, eight remained in the same condition, and one had myxœdema.

In five cases some immediate cause could apparently be traced. In two the symptoms came on during pregnancy; and in another they immediately followed an acute illness. In the fourth case the onset dated from a fright; and in the fifth, swelling of the neck was noticed whilst sitting for four hours in wet clothes. In the latter case, palpitation followed almost immediately.

Dr. Cleveland has analysed the symptoms immediately preceding death in thirteen fatal cases of exophthalmic goitre occurring in Guy's Hospital during the last fourteen years. Two of the patients died directly after the operation of removal of part of the thyroid gland, and can hardly be included in the same category as the others; but it is noticeable that the symptoms with which these died were practically identical with those observed in the non-surgical cases. Three other patients with Graves' disease died during the same period, but one of these suffered from mitral regurgitation with failure of compensation; another had severe diabetes with but a slight degree of exophthalmic goitre, and in the third death was due to acute rheumatism complicated by pericarditis and mitral stenosis. These three cases are therefore excluded.

The symptoms preceding death in all the fatal cases consisted of an aggravation of those typical of the disease, namely, delirium, generally characterised by hysterical outbursts and great restlessness, rise of temperature, quick pulse and respiration, sickness and diarrhœa. Any of these may, and often do, occur alone without involving a fatal result, but their combination is, Dr. Cleveland thinks, almost invariably fatal. Delirium would seem to be the most unfavourable of all the symptoms. In only two out of a series of 70 non-fatal cases was its occurrence noted. In one of these the temperature simultaneously rose to 101°, and the general condition resembled that seen before death: nevertheless, recovery followed. In the other, although there was delirum, sickness, diarrhœa and a rapid pulse, the temperature did not rise and the patient got better.

Alteration of the respiration, both in rate and quality, was a marked feature preceding death in several cases: in four, it was attended by a good deal of cyanosis and distress. Besides being rapid and shallow, it was often noted as "catchy," and in one case a bad prognosis was correctly given, because of the presence of this symptom. In five cases in which respiratory symptoms were marked, the lungs were examined *post-mortem* and found healthy.

In two of the fatal cases, jaundice developed before death. This complication was never noted in any of the non-fatal cases, and it is therefore looked upon as a sign of very bad omen. Simple pigmentation of the skin appeared to have no relation to prognosis.

Of the total series of eighty-six cases examined, complications only occurred in fourteen. Mitral regurgitation was diagnosed five times; but, as in none of the uncomplicated fatal cases was a lesion of the mitral valve found *post-mortem*, it is open to question whether this symptom was not the result of left ventricle dilatation rather than of an actual endocarditis. Acute rheumatism occurred three times, and Raynaud's disease was seen in one of the cases with mitral regurgitation. Phthisis and diabetes each occurred twice.

Autopsies were performed in eleven of the fatal cases. In four of these the brain was not examined. Changes were found in the brain three times. In one, there was a small recent hæmorrhage between the optic thalamus and the caudate nucleus; in another, changes were found in the floor of the fourth ventricle; and in the third, there was thrombosis of some of the branches of the middle cerebral artery, with acute softening of the parts supplied, and similar changes in the pons. The thymus was enlarged in seven cases. The alimentary tract was congested in three, and the solitary follicles and Peyer's patches were enlarged in two others. Broncho-pneumonia occurred once, the kidneys were enlarged twice without structural alteration, and the spleen was enlarged in one case.

Dr. Cleveland finally notices that, even when the symptoms of the disease are severe, the patients often recover well from other acute illnesses. Thus, acute rheumatism, pericarditis, and lobar pnuemonia, occurred as complications without fatal result, and another patient gave a history of having formerly suffered from an attack of pneumonia and nephritis with delirium.

In an editorial note in the *Lancet*, July 7th, 1900, reference is made to a paper by Dr. J. Popoff reporting two cases of exophthalmic goitre with pronounced tendency to hæmorrhage from the mucous membranes. Such a tendency had been observed by the writer in three out of six or seven cases, and he regards it as a valuable early symptom. In the first case, that of a woman of middle age, hæmorrhages from the gums occurred after the extraction of teeth, and also from the vagina and other mucous membranes. She had three attacks of bleeding in thirty-one days, accompanied by extravasations under the skin. The other patient was a woman aged 27; she suffered from hæmorrhages at an early stage of her disease, and six attacks occurred in hospital in the course of five weeks.

An interesting example of the occasional termination of exophthalmic goitre in the condition of myxœdema was recorded by Dr. Leonard Guthrie at the Harveian Society, January 3rd, 1901. The patient was first seen two years previously with symptoms of Graves' disease. These were apparently greatly relieved by the nightly administration of five grain doses of thyroid extract, and by October, 1899, the goitre had practically disappeared. The patient continued taking the extract until June, 1900, when she was confined to the house by an abscess in the foot, and the treatment was accordingly discontinued. In the following December she returned to the hospital with signs of advanced myxœdema. After a fortnight's treatment with thyroid extract, these also disappeared, but the pulse was then as rapid as it had been when the patient was first seen.

Not many cases have been recorded in which improvement has resulted from the administration of thyroid extract in cases of exophthalmic goitre: indeed, as a rule, the patients do badly with this treatment. Here, however, it seems possible that the change to a condition of myxœdema may have already begun at the time of the patient's first attendance at hospital, and that the improvement in the symptoms may really have been the result of this process, rather than of the administration of the thyroid extract. It will be remembered that a similar change from exophthalmic goitre to myxœdema is reported in one of Dr. Herringham's cases.

An association of exophthalmic goitre with scleroderma has occasionally been observed, and the occurrence of tetany has also been supposed to be dependent on some lesion of the thyroid gland. The case shown by M. Dupré at the Académie de Médecine is, however, noteworthy in that the three conditions were combined in the same individual. The patient was a man who had suffered from Graves' disease since the age of 13. When 24 years of age he began to develope signs of scleroderma in the fronto-nasal region and also in certain areas of the hands. At 29, the same part of the hands became afflicted with tetany, and this extended to the whole of the upper extremities. In this connection it may be noted that Exner (quoted by Mr. Walter Edmunds) produced a condition of tetany by dividing the superior and inferior laryngeal nerves on one side and excising the opposite thyroid lobe.

TREATMENT.

Traitement du goitre exophtalmique par la voltaïsation stabile. Par le Dr. L. R. Régnier. (*Le Progrès Médical*, 10 Février, 1900.)

Dr. Régnier published in 1895 details of a case of exophthalmic goitre which he had treated by the application of the constant current. He now reports that the patient has remained in good health and has had no return of his symptoms; and he also records details of five other cases treated in the same manner. Two of these patients ceased attendance at an early period of the treatment. The remaining three showed very marked improvement. It will be sufficient to give a short abstract of one of these cases. The patient was a woman, aged 22, who attributed her illness to a fright. On admission into hospital the pulse was 120, and the heart slightly dilated. There was slight exophthalmos, and the circumference of the neck measured 32 centimetres Treatment by the constant current was begun on June 8th: the negative pole, 200 centimetres square, was placed on the spine, the positive pole, 80 centimetres square, on the thyroid. Three applications were made per week, and each sitting lasted twenty minutes. On June 22nd, the pulse was 90, and the circumference of the neck had fallen to 30½ centimetres: the subjective symptoms were distinctly less marked. On July 12th the neck measured 29·8 centimetres, and the improvement was still more marked. On July 31st the pulse rate was 70, and the enlargement of the thyroid had practically disappeared. The patient regarded herself as cured and ceased attendance.

REPORTS OF SOCIETIES.

British Medical Association.

Birmingham and Midland Counties Branch.

Session 1901-1902.

The Third Ordinary Meeting of the Session was held in the Birmingham Medical Institute, on December 12th, 1901, the President, Dr. E. Malins, and later, Mr. Bennett May, being in the Chair.

Thirty-seven members were present.

Confirmation of Minutes.—The Minutes of the previous Meeting were read, confirmed as amended, and signed.

Acknowledgment of Vote of Condolence.—A letter was read from Mrs. T. Vincent Jackson expressing her thanks for the sympathy of the Members of the Branch.

Election of Members.—The following Members of the Association were elected Members of the Branch, namely—

E. S. Nutting, M.D., Edgbaston, nominated by Prof. Leith; E. Whichello, M.B., Birmingham, nominated by Dr. R. Shiels; J. A. Wolverson, L.R.C.P. and S., Chapel Ash, nominated by Dr. F. Edge.

Cases of Lupus and Phthisis treated by Koch's Tuberculin R.—Dr. Saundby showed two cases which were treated last summer in the General Hospital by injections of Koch's Tuberculin R. It was now five months since their dismissal from the hospital and the cure seemed to be permanent.

The following are brief notes of the cases:—

Case I.—W. P , aged 30, admitted May 25th for hæmoptysis; had been an out-patient for phthisis for a year; some flattening, dulness, and numerous crepitations at left apex; tubercle bacilli abundant in sputa; weight 9 st. 2 lbs.; treated by injections of Tuberculine R, commencing with mg. 0·002, gradually increased to mg. 2; the treatment caused no rise of temperature. The patient was discharged on July 18th; he had gained 4 lbs. in weight; the sputa were examined on July 30th and no tubercle bacilli were found. He has returned to work, is free from cough, and considers himself nearly as strong as he was before his illness. His weight in September was 9 st. 12 lbs., but at present he weighs exactly the same as on his discharge, 9 st. 6 lbs.

Case II.—W. H., aged 10, was admitted on May 16th with an ulcerated lupus involving the nose, both cheeks, and the upper lip; the disease had existed for three years. The treatment by Tuberculin R was begun on May 21st, and reached mg. 2 by July 17th, when he was discharged. His face was quite healed by July 1st. The cicatrix has remained perfectly sound, pale, and free from any appearance of recurrence of the disease. In both cases the injections of mg. 2 have been continued once a fortnight up to the present time.

Pseudo hypertrophic Paralysis.—Mr. M. A. Messiter showed a boy, aged 10, presenting the characteristic features of this disease.

The Treatment of Lupus, Rodent Ulcer, etc by Finsen Light, Roentgen Rays, and Electrical Currents.—Mr. Hall-Edwards read a paper with the above title, and gave a demonstration of the apparatus used. Remarks were made by Dr. Deanesly, Mr. Heaton, Dr. Saundby, Dr. D'Este Emery, and Mr. Bennett May; and Mr. Hall-Edwards replied.

The Electric Series Bath.—Dr. J. A Codd read a paper on this subject, under the following headings, namely—

"Failure of treatment, often due to too little current. Available current-strength limited through painful and caustic effects. These avoided by lessening density by increasing area of electrodes. The local bath an ideal electrode. The ordinary or 'shunt' bath,—advantages and disadvantages. Gärtner's diaphragm. The writer's 'series' bath. Whole body (except head) traversed by current; exact dosage possible. Solitary disadvantage of absence of stimulation of skin of trunk and thighs."

On the motion of Mr. Morrison, seconded by Dr. Stacey Wilson, and supported by Mr. Bennett May, it was Resolved "That the best thanks of the meeting be given to Dr. Codd for his valuable Paper."

Dr. Codd expressed his acknowledgment of the vote.

MIDLAND MEDICAL SOCIETY.

The Fourth Ordinary Meeting was held on Wednesday Evening, December 11th, 1901, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the Chair.

Mr. J. B. M. Kennedy, M.R.C.S., was elected a member of the Society.

Gastro-enterostomy.—Mr. Gamgee showed a man, aged 39, upon whom he had performed the operation of gastro-enterostomy. In the autumn of 1900 the patient began to have pain after food, and to vomit occasionally. The symptoms increased severely, and in August, 1901, he was vomiting a quart or more of frothy fluid every two or three days, and his stomach was enormously dilated. He was operated upon on September 6, 1901, and it was found that there was a stricture of the pylorus, due to a puckered-up scar on its anterior surface. An anterior gastro-enterostomy was done, a Murphy's button being used. The symptoms were immediately and completely relieved, and, since being operated upon, the patient's weight had increased 2st. 4½lb.

Peroneal Type of Progressive Muscular Atrophy.—Dr. Duncan Lawrie showed a boy, aged 7 years, suffering from the peroneal type of progressive muscular atrophy. There was no hereditary history, and none of the patient's six brothers and sisters were affected with symptoms of nerve disease. He had had no infectious illness before the commencement of the atrophy.

The main features were—(1) A slowly progressive atrophy of the muscles of the leg, beginning at the age of 18 months, and gradually leading to double talipes equino-varus. (2) The appearance of atrophy of the hand muscles after an interval of some time—first noticed two years ago—resulting in complete paralysis of all the intrinsic muscles of the hand, which showed the main-en-griffe position due to interosseous paralysis. (3) Loss of sensibility for heat and cold in the feet and legs below knees; no other affection of sensation. (4) The gradual extension of the atrophy in all the limbs with complete paralysis of the first affected muscles. (5) Diminution and final loss of faradic irritability in the affected muscles. (6) The plantar reflexes were represented by movements of thigh muscles, and the knee-jerks were absent.

The talipes equino-varus had been treated by tenotomy on three different occasions, beginning at the age of three years. In August, 1900, the exhibitor had done a tarsectomy on the right side, and with the help of boots fitted with inside irons, the patient was still able to walk fairly well.

Porro's Operation.—Dr. Malins showed a specimen of a pregnant uterus with attached tumour, removed by Porro's Operation. The patient, æt. 42, had had five children, and five miscarriages, the last in 1896.

A tumour was found on the right side of the cervix projecting against the brim of the pelvis and into Douglas's space: semi-elastic, not movable; it was thought to be ovarian. There was little pain or discomfort. The patient was admitted, and the abdomen opened, when the tumour was found to be a myoma on the right side of the cervix under the peritoneum, irregularly rounded, some 4½ inches by 3½. In the prospect of ultimate difficulties at term it was decided to remove the uterus and tumour together. This was done by securing the blood supply in the usual way, and cutting through the lower part of the cervix. The patient made an excellent recovery.

The tumour presented all the appearances of a myoma. The fœtus in the left oblique diameter, occipito-posterior. Cases of sub-peritoneal myomata in this situation are very rare, and necessarily dangerous in pregnancy.

Fibroid Uterus removed during Labour.—Dr. Thomas Wilson showed a fœtus, and a uterus with a fibroid the size of a fœtal head, which had grown from the posterior wall of the cervix downwards between the peritoneum on the front of Douglas's pouch and the posterior wall of the vagina. The specimens were removed by total puerperal hysterectomy from a patient, æt. 42, on the seventh day after her third labour began. The fœtus weighed 9lb., and was beginning to be macerated.

Glandular Ovarian Cyst removed during Pregnancy.—Dr Thomas Wilson also showed a left glandular ovarian cyst removed from a patient, æt. 19, at the fifth month of her first pregnancy. The cyst was placed in the left upper abdomen, and, at first sight, simulated hydronephrosis.

Hydatid Cyst of Pectoralis Minor.—Mr. A. Lucas showed a hydatid cyst, removed from the pectoralis minor of a girl, aged 20.

Epulis.—Mr. Lucas also showed a large epulis, removed by operation.

CLINICAL SOCIETY OF LONDON.

At a meeting of the above Society held Dec. 13, 1901, the President, Mr. HOWARD MARSH, F.R.C.S., in the chair,

After a paper had been read by Dr. S. H. Habershon upon the "Association of Movable Kidney on the Right Side with Symptoms of Hepatic Disturbance," a paper was read by Dr. T. Stacey Wilson upon—

THE THEORY OF COMPENSATION IN MITRAL INCOMPETENCE AND STENOSIS.

Dr. T. STACEY WILSON in his paper advocated the view that compensation in mitral regurgitation and stenosis depends mainly upon an increase in the aspiratory power of the left ventricle itself rather than upon the right ventricle, that, in other words, compensation under these circumstances depends on a *vis a fronte* rather than upon a *vis a tergo*. In proof of this theory he submitted tables of the loudness of the pulmonary 2nd sound, as measured by an apparatus he had devised, which showed that in compensated mitral regurgitation and stenosis the pulmonary 2nd sound was of no more than normal loudness; whereas, if compensation depended upon the right ventricle mainly, the pulmonary 2nd sound ought to be louder than normal owing to the increased activity of the right ventricle.

The loudness of the heart sounds was best measured by interposing a thin walled elastic bag (*e.g.* a toy balloon) between the stethoscope and the chest wall, and then by the slow inflation of the bag (by blowing air into it with the mouth) to lift the stethoscope till the sound in question was no longer audible. The height of the chest piece of the stethoscope could then be measured. The height to which the sound could be heard was taken as a gauge of its loudness. For the measurement of the distance in question a small platform was used which slid up and down on three legs graduated in fractions of an inch. By this method it was possible, to a large extent, to differentiate between the apparent loudness of the 2nd pulmonary sound, due to the artery being nearer the chest wall than normal, and true cases of accentuation, and also between true cases of accentuation and those where the sound was merely more slapping than normal without any true increase in its volume.

Out of some 25 separate observations of the loudness of the pulmonary 2nd sound, in fully compensated mitral disease, he found that in 18 instances the pulmonary 2nd sound was inaudible at a distance of 17 sixteenths of an inch from the chest, which might be considered the normal distance, and in only four instances was it heard as much as 20 sixteenths away; whereas, out of 72 observations in cases where compensation was more or less failing, in 42 instances it was audible 20 sixteenths or more from the chest wall.

In order to show in greater detail the bearing of his measurements of the various heart sounds in health and disease, he gave the following summary of the *vis a fronte* theory of compensation, and showed by tables how the measured loudness of the various heart sounds supported the propositions he advanced.

IN MITRAL INCOMPETENCE.

Proposition I.—The process of compensation necessitates dilatation of the cavity of the left ventricle, as well as hypertrophy of its walls, and the amount of dilatation in the compensated heart is directly proportional to the amount of blood which regurgitates into the auricle at each beat of the heart.

As mitral incompetence involves the leakage back into the auricle of a certain part of the contents of the ventricle at each beat of the heart, it therefore follows that in order to compensate for this leakage and allow of a normal amount being thrown into the aorta at each beat,

(1) Firstly: The ventricle must enlarge so as to hold both the normal amount, and that which will escape back into the auricle.

(2) Secondly: It must thicken its walls so as to be able to move this additional volume of blood.

(3) The theory of the enlargement of the ventricular cavity is as follows:—On the first occurrence of regurgitation through the mitral valve a progressive over-distension of the auricle will theoretically result from the leakage of blood back into that chamber. As soon, however, as the size of the auricle exceeds that of the ventricle, the latter will during its expansion be drawing towards itself more blood than it can hold; and the momentum of the blood which cannot find entrance will tend to dilate the cavity of the ventricle. In this way the ventricle will be dilated by its own aspiratory force until its size is comparable to that of the auricle. This will not occur until the ventricle is large enough to hold the full amount of the leakage in addition to its normal contents. (*Vide* writer's paper Clin. Soc. Trans., vol. xxxiv., case 3).

Proposition II.—The dilatation and hypertrophy, which can compensate for the defective working of the left ventricle during systole, will, according to this theory, also relieve the auricle from embarrassment during diastole by ensuring the proper filling of the ventricle.

For (1) Since the enlarged ventricle is able to accommodate all the regurgitated blood in addition to its normal contents, it follows that it will be as easy for the abnormal amount of blood to enter the abnormally large ventricle as for the normal amount to enter the normal ventricle.

And (2) The increased muscularity of the enlarged ventricle will ensure the slight addition to the aspiratory force which is required to draw the larger amount into the ventricle.

Proposition III.—Therefore by the time the expansion of the ventricle has ceased, the auricle will have been relieved of all the regurgitated blood, and only the normal amount will remain to be dealt with by it.

Proposition IV.—Therefore in fully-compensated mitral regurgitation no extra work will be thrown upon the left auricle, and there will be no embarrassment of the pulmonary circulation and no accentuation of the pulmonary 2nd sound.

Proposition V.—Neither would there be any dilatation of the left auricle unless the regurgitation were extreme.

Since the systole of the auricle and of the ventricle together occupy one half of the cardiac cycle, it follows that only one half of the full volume of blood will normally enter the auricle during this portion of the cycle. Therefore there will be room in the auricle during the ventricular systole for any amount of regurgitated blood up to one half of the total quantity put into circulation at each beat. If, on the other hand, the amount of regurgitation were to exceed one half of the normal output of the ventricle there might be dilatation of the auricle, even when compensation was fully established.

Proposition VI.—According to this theory of compensation there ought to be a slight increase in the loudness of the aortic part of the 2nd sound, because the greater expansile force of the hypertrophied and dilated ventricle will induce a more powerful recoil of the blood in the aorta, and will result in a more powerful closing and stretching of the aortic valves than in the case of the normally-acting ventricle.

IN MITRAL STENOSIS.

According to this theory, the left ventricle increases its aspiratory power in order to facilitate the entry of blood through the narrowed orifice, and so establish compensation. This is brought about as follows:

Proposition VII.—In mitral stenosis the left ventricle contracts with greater force than normal in order that the rebound, both muscular and elastic, may be correspondingly increased.

(1) An evidence of this is the increased loudness of the 1st sound which occurs in mitral stenosis.

(2) Temporary embarrassment of the circulation is accompanied by an increase, often excessive, in the loudness of the 1st sound, which lessens again as the circulation improves.

(3) This increase in the force of the ventricular contraction is also suggested by the occurrence of the hypertrophy of the left ventricle, which is not infrequently noticed in mitral stenosis.

Proposition VIII.—The left ventricle alters its beat. Its contraction terminates with greater suddenness and force than normal. This concentration of ventricular effort at the termination of the systole has the effect of further increasing the force of the ventricular recoil which immediately follows the systole, lasting as it does only 1-10th of a second.

(1) This is the explanation of the sharp and loud end of the 1st sound which is so characteristic of mitral stenosis.

(2) The characteristic cardiograms of mitral stenosis often show a more sudden recession of the heart from the chest wall at the end of the systole than in the normally-beating heart.

Proposition IX.—As a result of this additional aspiration the auricle can be relieved of much, if not all of the additional work which the narrowness of the mitral valve entails. We find very frequently an absence of dilatation of the left auricle in mitral stenosis where compensation was perfect at the time of death. (*Vide* Dr. Samways, *British Medical Journal*, ii., 98, p. 365.)

Proposition X.—Therefore in compensated mitral stenosis, if the narrowing be not very excessive, no extra work is thrown upon the right side of the heart, and there is no engorgement of the lungs.

(1) As evidence of this, we find the pulmonary 2nd sound of normal loudness, even in cases of severe mitral stenosis.

(2) We find that the accentuation of the pulmonary 2nd sound which is characteristic of failing compensation, gradually lessens as compensation improves.

(3) We may find no clinical evidences of pulmonary congestion or engorgement even in severe cases of mitral stenosis.

Proposition XI.—We may also expect some increase in the loudness of the aortic 2nd sound, apart from that due to increased arterial pressure, because of the increased ventricular aspiration, as suggested in proposition VI.

In conclusion he referred to the importance which the acceptance of this theory would have upon therapeutics, because of our almost complete ignorance, at the present time, of the influence which the various cardiac tonics exercise upon the expansile power of the cardiac muscle upon which so much depends in mitral disease.

REVIEWS.

DISEASES OF THE STOMACH AND THEIR SURGICAL TREATMENT.*

No one in this country is better able to deal with the Surgery of the Stomach than Mr. Mayo Robson, his Hunterian Lectures of 1900 established for him an unrivalled reputation in this special department, and the volume now before us, published in conjunction with Mr. Moynihan, will fully maintain his great fame as an abdominal surgeon. That this is a valuable contribution to the literature of English surgery there can be no doubt; the record of extensive experience and the authorative opinions based thereon must inevitably widen the province of gastric surgery in this country. The subject matter is well arranged and written in unmistakable language.

The volume contains three hundred pages, and is published in a highly attractive manner. Every chapter is so pervaded with practical common sense, and so supplemented by personal experience, that interest never flags for a moment. Here and there more detail and more exactness might have been desired, but the work cannot fail to form a valuable guide to less experienced surgeons, while it will create fresh incentive to exact observation in future workers.

The anatomical bearings of the stomach are given in a clear and concise manner, special stress being laid upon its position and natural variations, matters which, strange to say, still require emphasis.

The chapter on methods of examination is on the whole characterised by great care and precision. A chemical examination of digestion, however, cannot be considered complete without the estimation of gastric acidity, or the investigation of the presence and functional activity of such ferments as pepsin and rennin. Complete chemical examinations of proteid and carbohydrate digestion have been entirely passed over by the authors. Gastric absorption is not touched upon in this chapter, though it receives mention in connection with carcinoma. With such extensive experience as that of the authors, one cannot help thinking had more careful examinations of digestive processes been made the records would have been of great value to future workers. It is only by accumulated statistics that the true significance of altered chemistry in gastric disease is likely to be revealed.

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* Diseases of the Stomach and their Surgical Treatment. By Mayo Robson and Moyniham. London: Baillière, Tindall and Cox.

We heartily agree with the strong plea put forward for early exploratory incision in all doubtful cases of gastric disease suggesting the possibility of carcinoma. The risk of such a measure has fallen almost to a minimum, and as the authors clearly point out, it might make all the difference between palliative and radical measures. Gastrostomy, with its well defined indications is dealt with in a practical and masterly manner.

"Congenital diseases" and "Injuries of the Stomach" occupy two short chapters, both of which are very interesting and form worthy examples of the thoroughly practical nature of this excellent work.

Simple tumours of the stomach, though of rare occurrence, have received very careful attention, and the sound classification, briefly recorded cases and graphic illustrations make the article very complete.

The chapter on Carcinoma is one of great clinical value, the elaboration of which must have involved prolonged reading to the authors. The statistics collected are as valuable as they are interesting. The careful sifting of physical signs, especially those revealed by chemical and hæmatological examinations is admirable. The strong appeal made for early exploratory incision before the appearance of any tumour cannot have been made in vain. The confident advocacy by a pioneer like Mayo Robson of pylorectomy or partial gastrectomy wherever possible is as natural as it is convincing. There can be no doubt that in this matter we require not only early diagnosis but also, deliberate courage and the manipulative skill obtained only by frequent rehearsal.

After the necessarily short account of sarcoma of the stomach, we are brought to the great feature of the book, viz., "gastric ulcer, with its numerous complications." No candid physician can lose sight of the great sense of proportion and extreme fairness shown by Mr. Robson and Mr. Moynihan in this matter. Their accumulated statistics prove conclusively that the physician will act wisely by seeking frequently the co-operation of the surgeon in dealing with cases of gastric ulcer. The division of ulcer into acute and chronic, though to some extent arbitrary, is of great practical value, the relative frequency of each according to age and sex, as well as their separate sequelæ, help us in clearing up many paradoxical facts, and place the subject altogether upon a more scientific basis. We should scarcely be so sanguine as the authors of the value of local tenderness and postural pain in diagnosing the site of ulceration. The complications of gastric ulcer are given with exhaustive fulness.

In dealing with treatment the authors might with great advantage have dwelt in more detail upon the question of after-treatment. Little or nothing is said concerning the complications likely to follow such operations as gastro-enterostomy, and we look in vain for detailed guidance in reference to feeding, general stimulation, and regulating of the bowels.

The recorded work done upon Prof. Carle's cases of gastro-enterostomy by Dr. Fastino, in reference to the altered gastric physiology and pathology as a result of the operation, is of very great scientific value. These results, compared so carefully with similar work done by the authors after pyloroplasty, show that the latter operation, although to all appearance a better imitation of nature, is by no means so satisfactory as that of gastro-enterostomy. The restricted indications for pyloroplasty are well defined.

It is refreshing to learn that the whole operation of posterior gastro-enterostomy by suture over Robson's bobbin can be performed by the authors in thirty or even in fifteen minutes; this is indeed a triumph of dexterity and experience. Gastrorrhagia is dealt with in the same thorough manner as the other subjects, and physicians would do well to accept the timely suggestions which are given in this article. Persistent, and obstinate hæmatemesis, or hæmatemesis threatening life, must now be regarded as a surgical malady, requiring surgical measures for its efficient treatment. The four cases of gastrorrhagia recorded by Mr. Robson are very conclusive and highly encouraging. One of the most graphic chapters in the book is devoted to perforating gastric ulcer. Little or nothing is added to the literature of the subject beyond the authors' classification and rich experience. Special emphasis, however, is put upon important matters, and the general principles are so sound, that if universally adopted we should receive more encouragement and success in dealing with this appalling catastrophe. In reference to the relative frequency of acquired hour-glass stomach compared with the congenital variety we entirely agree with the authors. That many cases of so-called congenital hour-glass stomach are really the result of old ulceration there can be no doubt, but whether the congenital variety is really a myth, as suggested, we would hesitate to affirm. The authors have invested this subject with wonderful interest. The observations made and collected by them upon its characteristic signs are highly ingenious. Their extensive experience entitles them to be dogmatic, but although their great method of procedure is gastroplasty, we would venture to express the opinion that gastro-enterostomy with the proximal chamber of the stomach is worthy of further trial.

Advanced gastric dilatation, which is one of the commonest sequelæ of ulceration, is now a surgical condition. Mr. Mayo Robson's wonderful results will do much to encourage physicians to co-operate with the surgeon in the treatment of this troublesome disease. We cannot help regretting that the authors have not more emphatically condemned the unsatisfactory operation of pylorodiosis. Digital dilatation is a very gross surgical procedure, and pyloric stenosis has many degrees of intensity. The degree of dilatation suitable varies not only with the calibre of the opening but also with the extensibility and contractility of its walls, qualities which are extremely difficult to determine. Moreover, it is a dangerous operation, giving a high mortality, and recurrence of the disease is liable to follow. Much more is to be gained by performing pyloroplasty, though this operation has but a restricted application. Gastro-enterostomy, however, is the great operation for gastric dilatation, and the extremely low mortality of five per cent. obtained by the authors is enough to show that this measure is eminently satisfactory. A stronger appeal to physicians could not be made.

Acute gastric dilatation though full of interest is still shrouded in mystery. Until we can determine with accuracy the true nature of this remarkable disease we are not likely to succeed in making it yield to surgical measures.

Atonic dilatation is treated by gastroplication, the best method of which has been devised by Mr. Moynihan. It is very doubtful whether this cumbersome looking surgical procedure can ever supplant the more popular method of gastro-jejunostomy. Peri-
stritis as this work clearly shows is by no means an uncommon
ition, for which the authors confidently recommend gastro-
s the great line of treatment.

c fistula is dealt with in a very careful manner. For
op is, or Glenard's disease, which in its pure condition,
this rare occurrence, has been recommended the
Tub stro-pexy. Experience alone can teach us whether
the auth sure is of much value or not.

same pra lis and phlegmonous inflammation all receive
interest as consideration. They are described in the
excellent de ner and invested with the same scientific
stomach. her subjects. The work closes with an
n of the more important operations upon the

Mr. Robson's unrivalled experience entitles him to speak very forcibly of the merits of each operation, and his wonderful results vouch for his good judgment and great dexterity. Each operation is described in a short graphic manner, with diagrams so lucid that little context is required to supplement them. The remarkably low mortality of Mr. Robson's posterior gastro-jejunostomies must give a considerable impetus to the use of the suture method over that of union by Murphy's button.

It is now generally recognised that Von Hacker's operation has great theoretical and practical advantages over the Wolfler, and it is just such a record as Mr. Robson's which will engender the necessary courage to make this operation more frequently attempted.

In conclusion, we heartily congratulate the authors, and indeed the Leeds Medical School, upon the very excellent character of this book, and the high standard of gastric surgery carried on in their midst.

A TEXT-BOOK OF MEDICINE.*

We are heartily glad to welcome the appearance of a new edition of Fagge's Text-Book of Medicine, to give it the title by which it will always be best known to students of medicine. In truth, however, the handiwork of its original author is becoming smaller in amount as each successive edition is published, and that of its able editor—or now indeed co-author—Dr. Pye-Smith, occupies an ever increasing share of its pages. But so ably has Dr. Pye-Smith done his work, and so entirely is he in sympathy with the spirit of his former colleague, that the book still retains the peculiar stamp of its original authorship. This is, indeed, to give high praise to the writer who first undertook the difficult task of completing Dr. Fagge's unfinished work, and has since brought the text up to date without interfering one jot more than necessary with its original foundation.

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* A Text-Book of Medicine. Begun by the late Charles Hilton Fagge, M.D., F.R.C.P., sometime Physician to Guy's Hospital; completed after his death and since revised or rewritten by Philip Henry Pye-Smith, M.D., F.R.S., F.R.C.P., Consulting Physician to Guy's Hospital. Fourth Edition. Vol. I. London: J. and A. Churchill. 1901.

We know of no text-book of medicine which is in the least comparable with the work of Drs. Fagge and Pye-Smith. Doubtless, there are others as excellent in their particular way, but this is not the way of the two Guy's physicians. By some means or other—partly, no doubt, by the frequent reference to cases, partly by the fulness of clinical detail, but in addition by some peculiar characteristic which it is hard to identify—-the descriptions of the various diseases are given a clinical interest which is quite unique. It is true that this result is attained somewhat at the expense of conciseness, and we can imagine that for purposes of preparation for examinations, other text-books may be more widely appreciated. But for the keen clinical student, Fagge's text-book will, we believe, continue to hold the first place.

We cannot enter into detailed criticism of the various sections of the book. It must suffice to say that the whole work has been most carefully revised, and that, as far as we have been able to judge, it has been brought entirely abreast with the modern developments of medicine. At present only the first volume has been published, and this deals, in addition to certain introductory matters, with the specific diseases, diabetes, the various forms of arthritis, rickets, the diseases of the nervous system, and the first half—including the diseases of the bronchi and pleura—of those of the respiratory system. We are glad to learn that the second volume is already in the press, and that its publication may shortly be expected.

SYLLABUS OF LECTURES TO NURSES.*

This book contains merely brief notes for the delivery of lectures to nurses, and they will doubtless prove useful to those who feel it a matter of difficulty to sketch out such a course for themselves. As usual, the lectures seem to us to contain far too much anatomy and physiology, and too little of the practical details which are so much needed by nurses; but in this they do but follow the example ot nearly every book on nursing which we have been privileged to review. A great want, in our opinion, in all these books is a series of careful directions for watching the patients in the several diseases, and an explanation of the particular difficulties and dangers which are likely to occur in particular conditions. Such instructions would, we think, be of far greater practical value to a nurse than a description of the structure of the brain and spinal cord, or of the various coats of the alimentary tube. But a really practical course of lectures has yet to be written.

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* Syllabus of Lectures to Nurses. By Andrew Davidson, M.D., Port Health Officer, Singapore. London: The Scientific Press, Limited.

From W. B. Saunders and Company—

A Text-Book of Pharmacology and some Allied Sciences. By Torald Sollmann, M.D.

Human Physiology. By Joseph Howard Raymond, A.M., M.D. Second edition.

A Manual of the Practice of Medicine. By George Roe Lockwood, M.D. Second edition.

Atlas of Bacteriology. By Prof. Dr. R. B. Lehmann and Dr. R. O. Neumann. Edited by George H. Weaver, M.D. Parts I. and II.

A Laboratory Handbook of Urine Analysis and Physiological Chemistry. By Charles G. L. Wolf, B.A.. M.D.

Nothnagel's Encyclopædia of Practical Medicine. Typhoid Fever, and Typhus Fever. By Dr. H. Curschmann. Edited with additions by William Osler, M.D. Authorised Translation from the German, under the editorial supervision of Alfred Stengel, M.D.

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The Healing of Nerves. By Charles A. Ballance, M.S., F.R.C.S. and Purves Stewart, M.A., M.D., M.R.C.P.

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THE

BIRMINGHAM MEDICAL REVIEW.

FEBRUARY, 1902.

ORIGINAL COMMUNICATIONS.

EPILEPSY.

A CLINICAL LECTURE.

BY ROBERT SAUNDBY, M.D., M.SC., LL.D., F.R.C.P.,
PROFESSOR OF MEDICINE IN THE UNIVERSITY OF BIRMINGHAM, AND
PHYSICIAN TO THE GENERAL HOSPITAL.

ALTHOUGH it may be impossible to define in two or three words what we mean by epilepsy, it is a perfectly distinct group of symptoms, and whether we consider our knowledge of its symptomatology, diagnosis, prognosis, or treatment, compares favourably with other diseases, especially those of the nervous system.

The essential phenomenon of epilepsy is loss of consciousness, which may or may not be accompanied by other symptoms. but just as we do not say that a man is diabetic because sugar may appear temporarily in his urine, so we should not be justified in speaking of epilepsy unless this essential sign recurs with more or less frequency. Moreover, we recognise that infants and young children are extremely liable to suffer from convulsions not distinguishable from epilepsy, but which cease in most instances after the age of infancy is passed, and as a rule are easily traced to gastro-intestinal irritation, improper diet, the presence of worms, etc. Such instability of the nervous system, which is normal in young children, would be abnormal at a later age, and convulsive fits occur, if at all, only under very exceptional circumstances in the adult, but it must be admitted that we meet with the case occasionally of a person who has never had an epileptic fit and in whom, so far as we are able to observe, no recurrence takes place, but yet who may have had a single epileptic fit as the result of an indigestible meal or an excessive dose of alcohol. It is probable that even in these instances there is a relative degree of instability of the nervous system, but as we have no absolute standard of what is normal we are not able to speak positively about this.

MAJOR EPILEPSY.

Epilepsy is best known in its fully developed form (epilepsia major) where the loss of consciousness is accompanied by convulsions. In a typical case the patient, with or without some preceding warning the so called aura, falls suddenly with a groan or cry and the muscles on one side or both sides of the body are drawn into a tonic contraction causing flexion of the extremities and frequently rotation of the body, head and eyes. This tonic spasm is succeeded by clonic or jerking movements, the face becomes swollen and purple, the tongue is protruded, and blood-stained froth, from the tongue being bitten during the spasm of the jaws, appears upon the lips. The movements which are at first violent become gradually weaker and finally cease, the body coming to rest with the limbs extended. During the attack the breathing is stertorous and the sphincters may give way. After it is over the patient remains for some time in a comatose condition and awakes with no recollection of what has happened to him. He may complain of headache or of soreness in consequence of injuries received during the fit such as a bitten tongue or a bruise gained in falling, but is otherwise quite well and is soon able to continue whatever he may have been engaged in when the fit seized him.

MINOR EPILEPSY.

In the less developed form (epilepsia minor) the attack may consist in merely temporary loss of consciousness. For example, the patient may suddenly stop what he is doing for a few seconds, then recover himself and continue his interrupted conversation or occupation. In some cases it is said that movements may be automatically continued, even during the loss of consciousness, as in a case related by Trousseau where a musician engaged in the orchestra of a theatre continued to play the score during his attack, but this is exceptional. As a rule the patient if walking stops, or if writing, or speaking, or eating, there is a similar arrest of movement for a few seconds and the patient's face and eyes are fixed; there may be a little incoherent muttering; the sphincters are sometimes relaxed, most often the sphincter urinæ, but this is happily rare. In some cases the attack is so trsnsient that it may be long before relations or friends regard it as anything serious, but attribute it to "absence of mind" or "inattention"; children are told that they have been "dreaming" and the condition is indeed so slight that it would have no importance if it were not the frequent forerunner of more serious symptoms.

EPILEPTIC AUTOMATISM.

In an exceedingly interesting group of cases the loss of consciousness is of longer duration and may last a considerable time, during which the patient is in the condition of an automaton or somnambulist and may perform complex actions for which he is not responsible. For example, he may have a laughing fit lasting some minutes, but when he comes to himself and is asked why he has been laughing he is quite unable to explain and does not recollect having done so; or at other times, I am quoting from a case recently seen, he may appear to be frightened and ask to be protected against an imaginary danger, or he may put on his hat, go out of doors, and walk a considerable distance before he comes to himself. Some years ago I had a case of this kind in a young man engaged in a printing establishment who used often to go out and walk about for twenty minutes or more before he regained consciousness of what he was doing. This man, on more than one occasion when in this condition, did things which would have exposed him to grave censure if it had not been known that he was not responsible for his actions, and in fact it has often happened that under these circumstances epileptics have committed criminal acts. The best known of these are maniacal and homicidal outbursts of rage leading to assaults of a more or less serious kind. These attacks are of the highest interest and importance, not only from a medico-legal point of view, but also from that of ordinary practice, for they may be not recognised or are misunderstood and are confounded with hysteria or malingering.

DIAGNOSIS.

The differentiation of epilepsy in any of its forms from hysteria and malingering may be difficult in practice, because the loss of consciousness is the only point which is really characteristic of true epilepsy, and where we cannot rely upon the statements of the patient it may be impossible to get trustworthy evidence. As a rule, the patient is unaware of the importance of this point, and throws light upon the case by professing to know all that has been going on during an attack, while laying stress upon his total inability to exercise control over his movements. It is perfectly certain that epileptic fits can be simulated with great success, as was well shown in a case related some years ago of a convict, who died in prison in the United States after having confessed his history to the prison surgeon. This man, an Englishman by birth, had been in the habit when in England of simulating fits in the street with the object of collecting crowds, while his confederates picked the people's pockets. He had been several times in prison, and had been always able to pass his time in the hospital. After making England too hot to hold him, he crossed the Atlantic to the United States where he carried on the same game. He there got into jail, and following his usual practice he was admitted into hospital for epilepsy. Owing to certain circumstances the prison surgeon suspected fraud and sent him back to work. Apparently to impress the authorities with the genuineness of his attacks he had a fit when he was going up an unprotected staircase, and unfortunately fell a considerable distance to the ground, fracturing his skull and meeting with other injuries. He did not die at once, but was an inmate of the hospital for a considerable time, and, if I recollect rightly, it was when he knew that he would probably never be able to get about again that he made his confession to the prison surgeon. Trousseau relates that Esquirol believed it was impossible to simulate an epileptic attack in all its features, and had been discussing the point with Calmeil. All at once Calmeil fell on the floor in convulsions, and Esquirol after examining him turned to Trousseau and said, "Poor fellow, he is epileptic!" Hardly had he finished the sentence when Calmeil got up and asked him if he still believed that it was impossible to simulate epilepsy. In spite of this, Trousseau believed that Esquirol was right, as in his opinion no false epileptic would venture to fall in such a way as to hurt himself, but the story just related proves that we cannot rely upon this. Indian fakirs appear to possess the power of throwing themselves at will into an epileptic convulsion, although I cannot say that they lose consciousness. Of course it is only rarely that a feigned or hysterical fit has any close resemblance to a true attack of epilepsy. In most hysterical convulsive attacks the patient screams all the time, clings to the furniture or persons near, bites, strikes, or scratches, closes the eyes vigorously, and resists all attempts to test the sensitiveness of the conjunctivæ. No doubt, too, they take care to fall softly, and do not waste attacks when nobody is near to be edified, but they certainly may and do hurt themselves, as I have seen a hysterical patient strike her head repeatedly upon a hard wooden floor, her indifference to pain being probably due to the analgesia or loss of cutaneous sensibility, known to be a pretty constant symptom of hysteria.

Syncopal attacks may bear some resemblance to incomplete epiplepsy, although the analogy is generally the other way, incomplete epilepsy being taken for a simple attack of fainting.

In fainting there is pallor, pulselessness, and the condition does not pass away so rapidly as in incomplete epilepsy. There is often also anæmia or some sufficient cause to account for the seizure, but the loss of consciousness may not be complete, and when it is there is no spasm, but on the contrary all the voluntary muscles are relaxed. Wherever it is possible it is most desirable to see the patient in one of the alleged fits before expressing an unguarded opinion, as the reports of relatives are not always perfectly trustworthy.

Although convulsions are exceedingly common in infancy they generally cease after the first dentition. True epilepsy begins for the most part after the second dentition, and most commonly about puberty. It is doubtful how far somnambulism and night frights bear any relation to epilepsy; there is occasionally some association, but more often there is none. Convulsions occurring between the first and second dentition are generally attributable to intestinal worms or to organic brain disease, such as tubercle.

The frequency of the fits varies very greatly from several times a week to as many times in a year. In the status epilepticus one fit may succeed another without any interval. In many cases the fits only occur at night, or just after rising in the morning. They may be very long unsuspected, although the patient presents symptoms which call for explanation, such as impairment of memory and mental power, lassitude, and loss of energy; he may complain of sleep being unrefreshing, of waking with a headache in the morning, and of soreness or aching in the limbs. Under such circumstances the tongue should be examined for teeth marks, petechiæ looked for on the forehead at the margin of the scalp, and enquiry made for the occurrence of any such accident as wetting the bed. True epilepsy rarely begins late in life, in fact, after adolescence the diagnosis of primary idiopathic epilepsy should not be too readily accepted, as the convulsions are much more likely to be due to a cerebral growth, more especially a gumma, or to uræmia, or lead poisoning, or alcohol. At the same time, where there is a family history of epilepsy, and no evidence pointing to other conditions, it may quite well be that the disease shows itself late, and under these circumstances, the fits generally occur only at long intervals, and are therefore not of much importance. Such may have been the epilepsy of Cæsar, Mahomed, and the great Napoleon, for certainly it is difficult to believe that frequent epileptic fits can be consistent with the preservation of great mental power. I have never been able to come across the foundation for the statement that the great Napoleon was epileptic, certainly neither Bourienne, his early friend from schooldays, nor his valet Constant, nor O'Meara, his doctor and companion in St. Helena, refers to such an occurrence Constant cannot be called discreetly reticent, as he goes into all sorts of private details about his great master, and there is no reason to believe he would have concealed the occurrence of a fit, had he ever witnessed one during the ten or twelve years he was constantly with the Emperor. If Napoleon ever had a fit it was unquestionably a very rare and exceptional accident.

PATHOLOGY.

The pathology of epilepsy need not detain us very long as too little is known about it. It may be taken as certain that the disease does not depend upon any morbid anatomical change, using this expression in its ordinary meaning, that is, change appreciable by our senses aided by such instruments and methods of investigation as we at present possess. All the structural lesions which have been described as present in the brains of epileptic persons have been either secondary, inconstant, or accidental. Experiments upon animals have shown that it is perfectly easy to simulate an epileptic fit by cutting off the circulation from the brain and the theory that the immediate cause of an attack is vaso-motor spasm of the cerebral arterioles is very generally entertained. Some years ago Dr. Walter Moxon pointed out that at least in some cases there is temporary arrest or intermission of the heart's action just at the beginning of a fit. Such vaso-motor spasm might quite conceivably be the result of peripheral irritation, but obviously it does not usually follow and we have to assume the existence of some constitutional tendency in epileptic persons concerning the nature of which we are wholly ignorant.

CAUSATION.

Epilepsy often occurs in different members of the same family and probably is rightly called hereditary, that is to say, the special instability of the nervous system upon which it depends may show itself with more or less frequency in different individuals owning a common parentage. This instability seems to be indifferently transmitted by either parent, that is to say, the tendency to epilepsy may be transmitted by either a mother or a father belonging to a family in which this taint exists. It is often associated with other nervous manifestations especially insanity, migraine, hysteria, etc. The disease appears to occur with about equal frequency in both sexes. No station of life is exempt and there is not any ground for the belief that the disease depends upon occupation or mode of life; it is doubtless a form of degeneration and is more likely to occur in the offspring of a population poisoned by alcohol, bad air, improper food, and the unwholesome surroundings which undoubtedly in the past and to some extent in the present are the features of city life among the poor.

The late Prof. Brown-Séquard thought that he had succeeded in showing that guinea-pigs could be rendered epileptic by section of the sympathetic nerve on one side of the neck. This operation produced a sensitive area on one side of the face, irritation of which caused an epileptic fit. He maintained that the epileptic predisposition so produced was transmitted to the descendants of the animals operated upon. The experiments seemed very conclusive, but I do not know that they have been repeated by anybody and the epileptic race of guinea-pigs shared the fate of the animals in the Jardin des Plantes by serving as food during the siege of Paris. Great doubt has existed in my mind as to their value since I have learnt that epilepsy is exceedingly common among guinea-pigs.

The immediate exciting cause of an epileptic fit is not infrequently a violent emotion, such as fear or anger, and the origin of the disease in many persons is attributed to fright. We must however recognise the comparatively slight subsequent importance of the particular sensory impression which overthrows the very unstable equilibrium of the nervous system in these patients. More commonly we find that no definite cause can be assigned, but it is always possible there may be a normal or abnormal visceral stimulus starting from the digestive or generative organs. Certain conditions appear to exercise a restraining influence upon the fits; for example, they may cease during pregnancy or the course of a severe fever and return after parturition or as recovery sets in. A case of very severe epilepsy fell during a fit, and burnt himself severely on the buttock, so that for some months he had a large open sore six inches in diameter, during which period he enjoyed complete freedom from the fits, but as healing took place they returned. A seton was introduced in order to try to imitate the effect of the burn, but proved ineffective.

Somewhat similar was the case of the late Pope, Pius IX, who was said to have an ulcer on his leg which was always kept open, as its healing was followed by an epileptic seizure. Among the same class of phenomena must be reckoned those cases where the fit is preceded by a sensation, an aura as it is called, starting from one or other extremity, and the fit may be arrested or prevented by tying a ligature tightly round the limb in question It is of course quite possible that the feeling described as being in the limb may be only referred there, and may actually be due to changes taking place in the corresponding brain centre, but nevertheless, the tight ligature, perhaps by the painful impression produced, stimulates nerve currents which, when transmitted to the centre, arrest the progress of the disturbance. I am not advancing this as a fact, but as a speculation upon the mechanism by which the arrest of the fit is effected; whatever be the explanation there can be no doubt at all that such an arrest does take place.

I have already referred to the fact that epileptic convulsions may be due to poisoning by lead or alcohol, or to defective renal excretion in Bright's disease. A few years ago we had in Birmingham a good many cases of the convulsive form of lead poisoning among the workers at enamelled metalled signs. The poisoning took place very rapidly, for many of those attacked had only been a few months at work, and several died, so that there was a public outcry, and changes were introduced into the methods of manufacture which seem to have been effectual. The diagnosis was easy, as there was a well-marked blue line on the gums, and enquiry soon showed the source of the poisoning. I do not believe that convulsions ever occur unless the quantity of lead absorbed into the system is very large. The relation to alcohol is generally easily traced as the necessary dose is large, the patient has been very drunk, and the facts are easily elicited. Where there is a desire to conceal the alcoholic habit, as sometimes occurs in women, especially if living alone, it is possible that there may be a difficulty about the diagnosis, but in such cases, in all probability, the occurrence of the fit also would be concealed. Whenever we have to do with a case of seeming epilepsy, in which there is a history that the fits have commenced recently, it is our duty to exclude such possible causes of convulsions as Bright's disease and intracranial growths. As albumen is very frequently met with in the urine immediately after a fit, this must be allowed for, and a specimen examined which is not open to this objection, but in addition we should estimate the total urea excretion, look for casts, cardio-vascular changes, retinitis, etc. A cerebral tumour may be slow in revealing itself, but we may enquire for headache, vomiting, and double optic neuritis. There is a form of neuro-retinitis which seems to be common to Bright's disease and cerebral tumour, so that mistakes have been made in both directions. Cases of this kind have been recorded by several writers. These blunders should not be made now we know how fallacious such signs are, and realise the importance of basing a diagnosis of Bright's disease upon more than either albuminuria or retinal changes. Caution is all the more necessary as I have found that post-epileptic albuminuria may persist for several days after the occurrence of a fit.

PROGNOSIS.

On the whole we may say that a correct diagnosis in epilepsy can only be made by a careful study of the case, but that it does not present any difficulties which may not be got over by the exercise of a moderate amount of care. Epileptic fits are rarely fatal, but may sometimes cause death by choking from food, false teeth, etc., getting impacted in the larynx, or fatal injuries may result from falls, burns, etc. The usual sequel is mental impairment which seems to develop in proportion to the frequency of the fits. In this respect minor attacks are as important as major. Epileptics are peculiarly liable to death from cerebral hæmorrhage and pneumonia, or true serous apoplexy may come on after a fit or succession of fits and end fatally. Persons subject to epileptic fits are not eligible candidates for life insurance, but where the fits have ceased for some years and the family history is good, it may be possible to accept the life with some addition to the premium.

The question of the marriage of epileptics is one upon which medical practitioners are often consulted and should be able to express themselves with no uncertain sound. Where the fits have ceased under treatment and the disease appears to have been cured, or where fits occur only after an interval of a year or more, marriage may be permitted, but where in spite of treatment the fits continue, whether these are major or minor, marriage should be forbidden and it is the duty of the medical practitioner to point out that not only is epilepsy a hereditary disease, but that, when incurable, it is practically certain to cause mental deterioration and alteration of character and disposition as time goes on. No one who has not watched the change taking place can appreciate the terrible consequences that ensue where the patient is a husband and father or a wife and mother. Only death itself can bring relief to the distracted household unless, happily, the mental condition becomes sufficiently abnormal to justify removal to a lunatic asylum.

TREATMENT.

In the treatment of epilepsy it is of course desirable above all things to place the patient under the most favourable conditions for health. He should, if possible, lead an open air life, take a considerable amount of exercise, and engage to some extent in bodily labour, such as gardening. His diet should be simple and contain only a small quantity of butcher's meat. He should have no alcohol and is better without tobacco, but if he has acquired the habit of smoking this need not be absolutely forbidden. His teeth should be examined, and if defective his food should be minced or cut up so as to prevent its being swallowed in lumps. It is not advisable to give epileptics false teeth.

In spite of what has recently been said by an eminent authority, most practitioners will agree that it is impossible to dispense with the use of bromides, and that their introduction has marked a great progress in our power of dealing with this disease. The bromides should be used as often and in such doses as may be needed to check the fits, and in cases where, in spite of all we can do, the fits recur from time to time, the treatment should be kept up, as the patients are worse when it is left off, It is of course true that it is possible to give too much of the remedy, and that we may produce a state of depression by so doing which is undesirable; but no great harm is done, as the drug can be dropped, or its doses diminished, until the symptoms induced by it disappear. It is not fair to attribute to the use of bromides the dementia which is the natural result of the disease. I am sure that a great many cases of epilepsy are cured by the proper use of the bromide salts, and that those cases which are not cured are benefited to a greater degree than by any other remedy. It is better to employ the mixed bromides, a method introduced by Brown-Séquard and followed by Charcot, that is to say, an equal quantity of the bromides of potassium, sodium, and ammonium, but I always add ten or fifteen minims of tincture of digitalis to each dose of the medicine. A single dose should be given at bedtime, especially if the fits occur only at night or early in the morning, or a dose night and morning, increasing it to three times a day only where the fits are very frequent. We may begin with a dose of thirty grains combined with tincture of digitalis, and this should be increased up to whatever quantity may be needed. Niemeyer tells the following story which bears upon this point: he heard that two cases of inveterate epilepsy which he had for years treated without any benefit had been completely cured by a so-called "specialist" whose advertisements were to be found in the columns of almost every newspaper. He investigated the subject more closely and found that in one patient, whose governess had for years kept an accurate journal and whom he had not lost sight of, the attacks had been absent for several months, and the general health, which had been much impaired was decidedly better. The "specialist" refused the petitions of numerous persons of limited means to modify the high prices of his medicine or to give a prescription for it, so Niemeyer had a bottle of it analysed. The analysis showed that the mixture consisted of a solution of bromide of potash (ʒ jss–℥ vj) coloured with indigo. Both patients had taken the remedy in considerable doses. At first only two tablespoonfuls were given daily, but after ten days four, after ten days more six tablespoonfuls, after that the dose was increased more slowly, being gradually raised to ten, fifteen, and twenty tablespoonfuls. So that it appeared that in this case, as in most others where secret remedies prove useful, it was not the remedy but the mode of using it that was the secret. He thought it probable that the contradictory assertions current respecting the value of bromide in epilepsy were greatly due to the fact that different observers had not given it with equal perseverance and in the same doses. He determined to imitate the treatment of the "specialist" where practicable and induce other specialists to do the same, and he became convinced that thus used in large doses for a long time although it may not cure all cases of epilepsy, it will in many cases relieve the attacks for a considerable period, and in some cases will even remove advanced impairment of the mental functions. He goes on to say that neither in his own practice nor in that of others had he seen cases where the intervals between the attacks did not grow longer. Even patients who had previously received no benefit from the bromide of potash began to improve, when the dose was raised to eight or ten tablespoonfuls of the above solution daily.

Niemeyer had the reputation in his day of belonging to a school which numbered in its ranks some of the best physicians who lived in the middle part of the last century. They had broken with the traditions of the past and refused to write the long orthodox prescriptions containing many drugs of whose action they knew little and were therefore styled "sceptics" and were not popular, but they did a great deal for the reform of therapeutics. To this subject Niemeyer made two great practical contributions; he taught us the use of iron in anæmia in the shape of Blaud's pills and how to use bromide of potassium in epilepsy. The lesson need not be lost because no one any longer reads Niemeyer's book and probably it has passed generally into the common stock of knowledge, but there is always a danger of the precious results of clinical experience being upset by specious but false theoretical teachings.

MODERN METHODS OF TREATMENT OF GONORRHŒAL URETHRITIS.*

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THE treatment of gonorrhœal urethritis is a subject which is always of interest to medical men: for it is one on which many of us hold decided though sometimes conflicting views, and it relates to a disease which is of great importance, both because of its extreme frequency, and because of the untold misery it is capable of bringing upon its victims, whether they be innocent or guilty.

Then again, it is a subject which is almost endless. Ever since the earliest times, vaunted specifics for the cure of gonorrhœa have periodically, nay almost incessantly, been brought out.

One painstaking authority collected a few years ago no less than several hundred "infallible remedies," all of which have in turn been tried and found wanting At the present day the only mystery is that the disease has not many years ago been completely stamped out of existence, so numberless are the "never-failing specifics" which are daily being laid before a credulous public by a race of enterprising and advertising chemists.

The object of this paper will be in no wise to emulate their example, and to advocate some new line of treatment which shall never fail; but rather to briefly describe some of our more modern methods of dealing with the disorder, to comment on them, and to mention the success or want of success they have been attended by in my own hands.

First of all, a few words as to the importance of the subject.

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An impression seems, of late years, to be gaining ground that a urethritis, after the first acute symptoms have subsided, needs little, if any, medical treatmemt, and is scarcely worth consulting a doctor about. A chronic gleety discharge has, with some men, come to be looked upon as an almost natural condition of things, and certainly of no more moment than a cold in the nose. Whereas we all know that a neglected gleet will almost invariably, sooner or later, lead to a urethral stricture with all its consequent dangers to bladder and kidneys.

Personally I believe that gonorrhœa is responsible for almost as much human misery as is its more dreaded sister syphilis, and that it is quite as capable of carrying disease to the innocent wife and offspring. Many of the various pelvic inflammations in women owe their origin to an uncured gleet in the husband; while purulent ophthalmia, which is alone responsible for quite 25 per cent. of the blindness in our Children's Blind Asylums, has in most cases its origin in infection from a specific vaginitis of the mother.

Unfortunately, though we, as medical men, are not likely to fall into this error of minimising the importance of a chronic urethritis, yet our best endeavours to effect its cure are often accompanied by but indifferent success. But this, as I shall point out later on, is due to the multifarious origin of a gleet.

In the prognosis and treatmeat of urethritis, we must always remember that there are at least two quite distinct kinds of acute urethritis, and that in their incipient stages they are apt to be indistinguishable from one another. The one is the true specific inflammation due to an infection of the urethra by the specific organism the gonococcus, an eminently contagious disorder, and one which tends to invade the whole length of the canal and the various glands entering into it by a process of direct spreading infection. To this disease alone should be reserved the term gonorrhœa.

The other and less common form of the disease is a milder inflammation usually limited to the anterior part of the tube, and showing little if any tendency to spread towards the membranous and prostatic parts. This form, which is caused by the common organisms of suppuration, may occasionally follow intercourse with a chaste woman, and is predisposed to by some slight trauma during the act of intercourse. It is, as a rule, of short duration and easily curable by any weak antiseptic injection. A previous urethritis which has left the urethra weak and irritable certainly renders it more vulnerable to such causes of inflammation. Some of one's most gratifying and striking successes, where a complete cure has followed a week or two's treatment, are, I feel sure, cases where the disease in question has been this simple or septic urethritis rather than the true gonorrhœal one. In fact, so indistinguishable are these two forms of urethritis in their earliest stages that it behoves us to exercise extreme caution before we definitely pronounce the disease as a true gonorrhœal inflammation, lest, when intercourse has only taken place between husband and wife, we become by our mistaken diagnosis the means of bringing unfounded accusations against an innocent individual.

True gonorrhœa, on the other hand, due to the specific organism,—the gonococcus, cannot spring as it were from simple uncleanliness, but must be traceable to some other gonorrhœal discharge. We do not know for certain how long gonococci may remain living and virulent in the urethra, or in other words, how long a chronic gleet may continue to be infectious. But a patient with such discharge following a true gonorrhœa should never be given a clean bill of health, and is almost certain, if he marries to infect his wife.

Let me here say a few words about the micro-organism of gonorrhœa, the gonococcus, and its means of detection. It was discovered by Neisser in 1879, and has been proved, by cultivation experiments outside the body and injection, to produce the true disease. It is a large micrococcus ($1{\cdot}25\ \mu$) usually occurring in pairs (diplococcus) with their contact surfaces flattened. Each one sometimes shows a longitudinal groove, making the group look like four cocci. They are sometimes found free in the pus, but usually in the cells themselves, or between the epithelial cells of the urethra. They are extremely difficult to cultivate outside the body, but may be made to grow in human blood serum. They also grow for a short while on agar-agar and blood serum. They may be distinguished from ordinary micro-organisms of suppuration (staphylococci and streptococci) by the fact that they do not stain by Gram's method, all colour being removed.

[Abs: alcohol, Erlirlich-Weigert gentian violet solution.—Wash in alc. then put in iodine 10: Poiass: iod: 20. Water, 3000. Clear in oil of cloves and mount]

The best mode of detecting the organism in pus, is to collect a bead of pus from the urethra between cover-glasses. Dry on as a film. Then stain for a few minutes in concentrated alcoholic solution of eosin, and then for a few seconds in concentrated alcoholic methyl blue, wash in water and mount

It must also be carefully distinguished from certain micrococci which are found existing in pairs occasionally in the normal urethra, described by Lustgarten.

We now pass on to the treatment of an attack of acute urethritis. First of all, a few words on the so-called abortive method of treatment, or of cutting short the disease. It is admittedly only of service in the earliest stage of the disorder, before the ardor urinæ and profuse discharge have commenced, in fact before our diagnosis is in some cases any more than a provisional one. The urethra is first of all rendered insensitive by the injection of a weak cocaine solution. A strong solution of nitrate of silver, grs. xv. or xx. as ℥i, is then injected into the urethra by an ordinary urethral syringe. The injection is followed at once by a profuse purulent discharge, with all the accompanying symptoms of acute urethritis. This is treated by mild antiseptic injections of potass. permanganat or Boracic acid, and in successful cases should be quite well in ten or fourteen days. We must presume that in the acute inflammation so set up, the specific gonorrhœal organism either fails to obtain a foot-hold or is destroyed.

The chief drawback to this somewhat severe and heroic treatment is its frequent want of success. The gonorrhœa pursues its course unchecked, and in fact, in many cases, all acute symptoms are accelerated and intensified. There is also some risk of a urethral or peri urethral abscess being set up and (it is said) of stricture.

Quite lately, systematic early irrigation of the urethra has been advocated as a means of cutting short an attack. The anterior portion of the urethra is irrigated by means of a special apparatus, with a suitable nozzle to fit in the urethra with some mild antiseptic lotion, such as potass. permanganat, 1–5000, or protargol, 1–4000. The irrigation, which should be carried out twice daily for three or four days, and then daily for two or three weeks, is at best a tedious method. I have had no experience of it, as I have never yet been able to find a patient willing to submit to such a course of treatment in an early stage of the disease.

With regard to the general management of a case of gonorrhœa, the first essential in the treatment is complete physical and sexual rest. The latter form of rest is of course to guard against all causes of urethral congestion. I do not think sufficient stress is usually laid upon the importance of physical rest. I feel sure that if all patients with acute urethritis could be made to lie in bed, or, at any rate, on a couch for at least a week, we should see fewer such complications as epididymitis, cystitis and the like, and the duration of the disease would be materially shortened. I have frequently noticed in cases where the inflammation has been so acute as to compel the patient to lie up for a few days, how rapidly the discharge afterwards dries up. In any case, a man should always be advised to take as much rest as he possibly can—to lie on a couch for two or three hours every day with the legs and hips raised. All exercise which can possibly be avoided should be forbidden. He should never even walk when it is possible to ride. The worst forms of exercise in all stages of the disorder are horse exercise, rowing, and bicycling, and these should always be strictly forbidden.

Hot hip baths are of great service at the height of the inflammation, and by relaxing the peri-urethral tissues assist materially in relieving pain. Both penis and scrotum require support. A well-fitting suspensory bandage is always a great comfort, while the penis should be supported by a bandage or silk handkerchief passed between the thighs and fastened at the back and in front to an abdominal bandage or belt.

Free exit must be provided for the urethral discharge, and on no account must it be allowed to get dammed up under the prepuce, or in any rubber apparatus. There are several inexpensive and efficient bags with some absorbent material in them now sold for this purpose.

As regards diet, our main object in the early stage, and also while the inflammation is at its height, is to keep our patient on a reasonably low diet, and to render his urine as little irritating as possible to his inflamed urethra. In the acute stages meat and fish should be forbidden, and the patient fed upon milk and farinaceous puddings, with bread and butter. Certain articles of diet must be excluded from the dietary as long as the attack lasts, as they are apt to encourage and keep up the discharge. First among these must be placed alcohol. Alcohol in every form is to be forbidden. I am sure we can all quote many and many a case from our clinical experience, where a single deviation from this strict rule has been the undoing of weeks of careful treatment. I make two rules in respect to alcohol. I never allow any form of alcohol, however dilute, during any stage of the disease, and after apparent cure I never myself, if possible, sanction the return to stimulants without warning the patient that such return may possibly bring back a little discharge.

Salt and spiced foods, curries, condiments, coffee, tea (unless extremely dilute), pickles, made dishes, asparagus, sauces, should all be excluded from the dietary, owing to their action on the urine. Milk and cocoa may be taken freely. Barley water, linseed tea, and similar demulcent drinks are frequently of use when there is much pain and frequency of micturition. The patient's fluids should not in my opinion be stinted. He should on the contrary be encourged to drink freely, and so dilute his urine.

Absolute cleanliness is of the utmost importance. The prepuce must be well retracted twice every day, and its inner surface and the glans penis bathed with warm water or boracic lotion. One cannot in this connection be too careful in warning the patient of the infectiousness of his discharge. I have known the disease to spread through an entire family, purely from ignorance of the necessary precautions to be observed in regard to the use of linen and lavatories. Of its terrible effects, if the pus be carried by the patient's fingers to his conjunctivae, one need scarcely speak here, and a timely word of warning may be the means of averting a partial or complete blindness.

The Internal Medication.—We now pass on to use of drugs internally in gonorrhœa.

When there is no discharge, but only irritation about the urethra and frequency of micturition, and during the time the discharge is increasing in quantity, in other words during the incubative stage and the early part of the acute inflammatory stage, the various oleo-resins, which are so useful in the later stages, should be avoided, as they only do harm. Our treatment should begin with a brisk purge. This, by emptying the rectum and sigmoid is of marked value in subduing the congestion of the prostate and deep urethra. When there is fever and much constitutional disturbance aconite given in small doses with an alkali will be found very useful. In less severe cases I usually give a mixture containing bicarbonate of soda, a little sulphate of magnesia, and some tincture of hyoscyamus with either, infusion of buchu, or liquid extract of kava-kava. The mixture renders the urine less acid and acts as a sedative to the urethral mucous membrane.

Erections of the penis at night when excessive and painful are best treated by making the patient sleep on a hard mattress, giving a small and very early supper, and some device when in bed to prevent his sleeping on his back. As sedatives, chloral, bromides, cannabis indica, camphor, and opium are all useful.

A very efficient suppository is one containing camphor, gr. ij, ext. bellad., gr. j, ext. op., ij, put in the rectum just before going to bed. A urethral injection containing liq. morphinæ, ♏x, and cocaine hydrochlor., gr. ¼, is recommended by some authorities, just before the patient goes to bed with the same object.

When the inflammatory stage is beginning to abate and during the whole of the stage of gleet, the various oleo-resins form our sheet anchor, as internal medicines. Ol. santal. flavi, copaiba, cubebs, Canadian turpentine, hydrastis canadensis, and others are the ones most usually employed, and may be given alone or in combination. Sandalwood oil I place first as I have found it most efficacious and least liable to disturb the digestion. But they are all nauseous to the taste, and apt to upset the stomach, and for this reason are generally given in the form of capsules. On the other hand, if they can be tolerated in a mixture, combined with a little liquor potassæ, their power for good is certainly increased.

Cubebs seems to be even more powerful than copaiba as a stimulant to the urethral mucous membrane, and is especially useful in the more chronic cases of gleet. Chevalier's perles which contain equal quantities of ol. santal. flavi., copaiba, and cubebs, seem to owe their efficacy to the cubebs which they contain, and will be found very useful in rebellious cases.

Saw-palmetto, as a dry extract, in doses of two to three grains, or as a fluid extract in one or two dram doses, has a considerable reputation, especially in America, and may be given with any of the other drugs just mentioned, or in capsules.

Methylene-blue has of late been extolled in these cases. I have had no personal experience of it.

The Local Treatment.—During the incubative stage the urethra is best left entirely alone as regards local treatment, if the case is one of undoubted gonorrhœa. When there is still a doubt as to whether the trouble may not be a simple urethritis, limited to the anterior portion of the urethra, I am very fond of ordering an iodoform bougie (iodoform, gr. v., ol. eucalypt., ♏j.

cocaine hydrochlor., gr. ¼, ol. theobrom., *q.s.*). Such a bougie passed into the urethra each night for three or four successive nights does certainly seem to quickly cure a simple urethritis.

This is the stage in which the abortive method of the treatment, if it is to be of any avail, must be tried. There are two chief ways of doing this, which I have already alluded to briefly. If a strong astringent is to be applied to the anterior urethra, the best way of doing so is by means of the urethral endoscope, to which I shall call attention presently. My personal experience is limited to two cases. In the one the gonorrhœa, if true gonorrhœa it was, quickly came to an end. In the other, a most acute and alarming inflammation was set up, and the patient ran such a risk of urethral abscess, and convalescence was so prolonged, that I determined never again to repeat the experiment.

The other method—by repeated daily irrigation—cannot strictly be termed an abortive method of treatment, as its introducers advocate that it be kept up for a fortnight or more. To my mind there are two objections to it. Firstly, that such irrigations must be performed by the medical attendant, and to be of value must be repeated once or twice daily, and few patients will be found willing to submit to such treatment. And secondly, there must be considerable risk of carrying the gonorrhœal injection to the deep urethra and bladder.

When the discharge is profuse, some very mild antiseptic mixed with an anodyne is to be used as an injection to wash the pus out of the inflamed canal. Permanganate of potash, 1–5000, or weak boracic lotion with a half or one per cent. of cocaine in it, makes an admirable detergent injection. Perchloride of mercury, however dilute its solution, is apt to cause a good deal of irritation at this stage. Mercurol—a combination of mercury with yeast nuclein—a proprietary preparation, is certainly less irritating when used in solutions of the same strength as the perchloride salt., and may occasionally be tried in its stead.

A most useful injection, and one which can be used both early and late is permanganate of zinc. The late Mr. Berkeley

Hill first brought it to my notice, and I have since trying it used it almost to the exclusion of all others. It must be used in very dilute solutions in the early stages, gr. ⅛ ad ℥i, and this strength may be increased as the inflammation subsides and the stage of gleet is entered.

Whatever be the solution employed as an injection at this stage, our object should be the same, namely, to cleanse with a weak antiseptic the anterior portion of the canal. With this object in view, it is important that no undue force should be used in injecting, and that not more than two drachms of fluid be used at each injection, lest the deeper part of the urethra and bladder be infected. Before using the injection the patient should always empty the bladder and thus flush his urethra, and the injection should be allowed to remain in the urethra a minute or two.

When the discharge becomes thinner and less purulent, the ardor urinæ less pronounced, in fact at the commencement of the third stage of the disease, then is the time to begin astringent injections. The local treatment from now onward becomes the most important.

The solutions which have proved of most value in my hands, are the following—

Permanganate of zinc, in strength of ⅛ gr ad ℥j increased up to gr. ½ ad ℥j.

Sulphocarbolate of zinc - - ij–iij gr. ad ℥j.
Sulphate of zinc - - - gr. ½–j gr. ad ℥j.

Another useful injection is—

Zinci sulphat. - - - gr. ½
Plumbi subacet. - - - gr. j.
Tr. catechu. - - - ♏x.
Aq. - - - - - ℥j.

or, a mixture of the three sulphates—

Cupri sulphat. - - gr. ¼
Zinci sulphat. - - gr. ½ ad ℥j.
Ferri sulphat. - - gr. j.

In the more obstinate cases we may have recourse to dilute solutions of nitrate of silver, beginning with gr. ¼ and cautiously increasing the strength.

Several preparations of silver, such as argentamine, argonin, protargol, have of late years been put forward as substitutes for silver nitrate.

Argonin is a compound of nitrate of silver and casein soda, forming a soluble powder. It may be used in solutions of one to ten per cent. as an injection. In the few cases where I have tried it, I have found it less irritating than nitrate of silver, but scarcely so effective.

Protargol is a proteid compound of silver, containing about eight per cent. of silver. It is certainly very valuable as an injection when used in about a one per cent. solution, increased gradually to four per cent.

In one of the above ways we may in the large majority of cases effect a cure in about five or six weeks, provided that our patients will patiently and conscientiously carry out our instructions. A complete and perfect cure is in my experience but seldom effected in a shorter period than this, at any rate in a first attack.

But unfortunately there remains a small percentage of cases which resist all our efforts, and where a discharge persists in spite of all our treatment. Many, again, of our patients only consult us when matters have already reached the chronic stage, or it may be after months or years of such gleety discharge. The cure of these cases will sometimes baffle our utmost skill and endeavour ; the patients wander from one practitioner to another, or fall into the hands of some unscrupulous quack, and, sooner or later develop urethral strictures or some other urethral complication.

We shall best succeed in our treatment of these most troublesome cases, if we bear in mind the more common causes of such discharges, and then try and diagnose which condition is present in the one under treatment. Such a gleety discharge may owe its origin to—

1. A chronic unhealthy inflammation of the mucous membrane

of the whole length of the urethra, but particularly of its deeper portions, the membranous and prostatic portions.

2. Some slight stricture with ulceration of the membrane behind it.

3. So-called granular patches in the urethra.

4. Inflammation, or abscess in the lacunæ or follicles entering into the urethra.

5. Chronic inflammation of the prostate or its ducts.

A large sized cold metal bougie should first of all be passed if the ordinary astringent injections have been given a fair trial and have failed. This at once detects any narrowing of the urethra when present; gives us evidence of any specially tender point, while its occasional passage seems to have a beneficial influence in some cases on the urethral mucous membrane and assists in its cure.

The urethral endoscope should then be given a trial. By its means we can diagnose and locally treat the cause of the gleet if it exist in any part of the urethra anterior to the bulb, and in some cases as far as the membranous urethra. The use of the instrument is in my opinion one of the greatest advances made in recent years in genito-urinary surgery. (A demonstration was here given of the Urethral Endoscope and its method of employment.)

Any locally inflamed, or granular patch can by its means be treated by direct application. The most useful of these is a strong solution of nitrate of silver, gr. xv–xxx ad ℥j, or protargol in strength of from 5 to 20 per cent.

Such applications should be made two or three times a week, and a mild astringent injection given between the applications. One can thus effect a cure in some of the most troublesome cases of chronic gleet.

When that portion of the urethra, which we can examine with the endoscope, shows no obvious lesion sufficient to account for the continued discharge we may fairly conclude that the mischief lies deeper, either in the membranous or prostatic portions, or in the ducts or lacunæ leading into them. The ordinary astringent injections made by means of urethral syringes are here of no use, for they can be rarely if ever be made to pass beyond the bulb of the urethra, owing to the action of the compressor urethræ muscle.

We have then to fall back upon other methods of applying our drugs locally, and have a choice of several. Each one of which may be tried in turn.

Firstly.—The occasional passage of a cold metal bougie seems in some cases to effect a cure by setting up a more healthy action.

Secondly.—I have frequently found in these cases that the daily use of medicated urethral bougies made so that the active drug is applied to the deeper portion of the urethra, is followed by excellent results. Messrs. Thos. Christy of London, make an excellent form of urethral bougie called an antrophore, in which the active drug is fixed on the end of some flexible metal bougie. They form an admirable means of applying drugs locally and can be used by the patient himself.

A third method is the instillation of a few drops of some strong astringent by means of a special deep urethral syringe. Guyon's is perhaps the best form of such syringe. By its means a few minims of a solution of nitrate of silver, gr. xx or xxx, ad ℥j, or of protargol, five to twenty per cent. may be injected in the inflamed urethra. This form of treatment is apt to be followed by a good deal of pain and tenesmus, and must be employed with due caution at first.

Another method which is highly spoken of, is a daily irrigation of the urethra with a large quantity of some mild astringent fluid.

The *modus operandi* is as follows: the patient is lying down with a large receiver between his legs. An irrigating apparatus is filled with two pints of the solution, and a glass urethral nozzle fixed on the end of the tube. After irrigating the meatus and the anterior portion of the urethra and allowing the fluid to escape through the meatus, the irrigator is raised, the pressure thus increased, and by compressing the external meatus the fluid is forced along the urethra into the bladder. When this is full the patient is instructed to pass water, and thus again irrigate his urethra.

Various solutions may be tried, but whatever drug be employed it should be used in very dilute solution. It is apparently the volume of fluid which is used, which is the active agent, rather than its exact quality.

Potassium permangante 1–5000, boracic acid gr. xx ad Oj, or protargol 1–400, gradually increased to 1–200-

To be of use the treatment must be carried out daily, and the medical attendant himself must at any rate superintend it. The time involved in its performance and its irksomeness, make it difficult to persuade patients to submit to it, but in suitable cases it is often followed by the best results.

When a gleet is due to a chronic inflammation of the prostate gland and its ducts, it will sometimes defy all our efforts to cure it. In such cases American surgeons have advised daily massage of the prostate per rectum, with a view of getting rid of the inflammatory products in it. It is, however, a proceeding so disagreeable to both practitioner and patient that I doubt if it will ever be adopted in this country and I have no experience of it.

I am accustomed in these cases, in addition to the remedies I have already alluded to, to give the patients every night a rectal suppository of ext. bellad. gr. i–ij, icthyol gr. ij, in a basis of glyco-gelatine. These act in much the same way as vaginal suppositories of glycerine and icthyol in cervical catarrh, and I believe that as they lie in the rectum, close against the prostate, do exert an influence on that gland.

I have now briefly enumerated the most important of our more modern methods of treating this most rebellious of disorders, a chronic specific urethritis. I feel confident that in these chronic cases our treatment, if it is to be a successful one, must be chiefly a local one, and that in this as in other disorders, a correct diagnosis of the exact lesion which is keeping up the discharge should be our first and great aim. It is no use slavishly continuing with various anterior urethral injections, which do not even enter the deeper parts of the urethra, in cases where the lesion lies in the membranous or prostatic portions of the canal. And medicaments in proper strength, if only applied directly to the actually inflamed or ulcrated spots, will sometimes quietly succeed, where months or years of an empirical mode of treatment by injections has failed.

I do not for a moment maintain, or even hope, that in these methods we have a panacea for all cases of gleet. A small percentage of cases will defy all our efforts, and the efforts in all probability of our brother practitioners—for these patients are notorious wanderers from one medical man to another in search of cure. But, at any rate, by adopting some such rational line of treatment, we shall greatly lessen the number of such cases, and so help to remove what has hitherto been an opprobrium of our art.

THE NORDRACH METHOD OF TREATING CONSUMPTION, AND SOME OF ITS RESULTS.

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It may be thought by the readers of this Review that too much has already been written and read of the Nordrach method of treating consumption, and the results thereby obtained. They may possibly think that every doctor nowadays understands the open-air method of treating consumption, and knows all about it.

To a certain extent no doubt this is true. Nearly every doctor nowadays, except the most benighted and old-fashioned, does know that consumptives require plenty of fresh-air, and plenty of nourishing food. Nevertheless, fresh-air and food given with an unsparing hand, and without discretion, do not make up the sum of the Nordrach treatment. Other details of a simple but definite kind are equally important in the ingredients which go to make up the successful results obtained by this method.

I am inclined to think that these details are not as yet sufficiently appreciated by those medical men who have not had the opportunity of making a stay at Nordrach itself, or of watching the working of this method at one of the British Sanatoria carried out on the same lines.

A stay of six months at Nordrach, for my health, and a further eighteen months' experience of carrying out the treatment on others in an Irish Sanatorium, has given me a considerable opportunity of appreciating the Nordrach method at its true worth, and forming an opinion both from observations on myself and observations on others. I have, therefore, thought it might be interesting to readers of this Review to discuss in detail the Nordrach method of treatment, to give them some idea of what Nordrach is like itself, and to end by giving very briefly a few examples of the results obtained by this method in the uncertain and inclement climate of Ireland.

The Nordrach method of treatment consists of three simple things :—

1. Abundance of fresh air at all times and in all weathers.
2. Superabundance of food.
3. Rest and exercise graduated according to the state of the body temperature.

As the last point is one of the most important, and the least understood, I will venture to discuss it first.

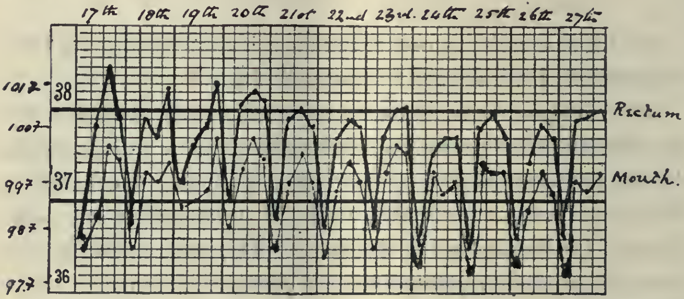
With very rare exceptions, no exercise at all is allowed in the Nordrach method unless the body temperature is within normal limits, and has remained so for at least a week. Furthermore, the temperatures are all taken in the rectum regularly four times a day. On waking in the morning, about 7 a.m., at 12 noon, at at 6 p.m., and after getting into bed at night about 9.30.

As is well known, rectal temperatures may vary in health between 98·6 or below in the morning up to 100·4 after exercise, or occasionally in the evening after meals. The temperatures are taken in the rectum because rectal temperatures give a much nearer approximation to the real temperatures of the blood than can be obtained in any other way, and in a prolonged and insidious disease like consumption it is most important to know the smallest variations above the normal.

A great many objections have been offered to taking the temperatures in the rectum. People have said that it is undignified,—that it is unnecessary,—that English people would not put up with it, etc. As a matter of fact, however, English people put up with it with perfect equanimity. There is nothing undignified about taking the temperature in the rectum in private, and I need hardly say that it is not customary to take rectal temperatures in any sanatorium in public.

It has been urged that it is unnecessary because the mouth temperature gives a sufficiently true indication of the range of pyrexia, and that even if it were best to know the rectal temperature, a few days' simultaneous observation of both would show the definite ratio of difference between the two, and then it would be sufficient to take the mouth temperature. This, however, is not the case. There is no definite ratio of difference between rectal and mouth temperature.

For nearly three months I took rectal and mouth temperatures on myself simultaneously, and subjoin a small portion of the chart.



It will be seen that the ratio of difference is an extremely variable one. The first thing in the morning, when the mouth has been shut for many hours during sleep, the rectal and mouth temperature, as a rule, approximate pretty closely to each other, while at other times of day there may be as much as a degree, a degree and a half, or sometimes even two degrees between them. Sometimes, too, it will be observed that the mouth temperature goes down while the rectal temperature goes up.

I think there can be no doubt that the rectal temperature is far the most satisfactory one to record, and as a matter of fact when one has to take one's temperature four times a day for perhaps six months or more it is far less irksome to take it in the rectum than the mouth. The temperature record to which most importance is attached is the one obtained before rising in the morning. In the quiescent and obsolescing stages of pulmonary tuberculosis this is not only as low as 98·4, but generally very considerably lower, as is shown in the latter part of the above chart. If the morning temperature remains persistently at 98·8 or 99° or more, it nearly always means that the tubercular disease is not quiescent, even though the temperature during the rest of the day may not rise above the normal limits above mentioned. Complete rest is then necessary. The chief exceptions to this rule seem to be in women, who often have slight elevations of temperature due to their periods, and also in certain patients of neurotic tendencies, who seem to be quite capable of raising their temperature from two to six-tenths of a degree above normal by lying in bed and worrying themselves over what it is going to be.

The temperature being shown by observation to be within normal limits, the patient is allowed first to leave his bed for a couch, and then to commence to take exercise broken by stated periods of rest. No form of exercise is allowed but slow walking, at not more than about two miles an hour, with frequent stoppages to sit down and rest. As Nordrach is at the bottom of a deep and narrow valley, all the walks are up hill to start with and the patients come home down hill. This situation was not chosen by chance, but on purpose. It is considered that slow hill climbing up graduated paths is a very valuable exercise for consumptives, as it strengthens the muscles of the heart, the muscles generally, and expands the healthy portions of the lungs, Moreover, it is best that the sanatorium should not be at the top of the hill, but either at the bottom or on its sides. It is well that the patients should have the fatigue of the hill climbing not at the end of the walk when they are tired, but at the beginning of the walk when they are fresh.

The length of the walk is exactly regulated by the physician to fixed and definite distances, according to the strength and capacity of the patient; the point being that the patient should get sufficient exercise stopping short of fatigue, and that the temperature after exercise should not be raised above 100·4° F.

The chief walk is taken in the morning, and the patients all lie down on couches in their rooms for an hour before the chief meal of the day at one. In the afternoon a short walk is taken, and the patients again lie down before the evening meal at seven. They all go to bed at nine, and get up about seven.

So that even for a robust patient there is much rest, from nine to ten hours in bed, two hours more on their couches, and much sitting about during their walks

The walks vary from a few yards to several miles, six or seven miles being generally the longest walk apportioned. As I have already said, no other form of exercise but slow walking is indulged in. The dancing, tennis-playing and other forms of violent exercise, which are allowed at some sanatoria are most pernicious. During such forms of exercise strong respiratory efforts are made; freshly formed scar tissue is broken down, and tubercle bacilli, which had been shut off by adhesions from the general lung tissue, are again set free and disseminated into hitherto healthy parts of the lungs. The evil effects may possibly be seen at once in a rise of temperature and fresh outburst of cough, etc. Very often, however, the symptoms are delayed for one, two, or even three weeks, until the freshly scattered tubercle bacilli have gained sufficient hold to give rise to constitutional symptoms.

In cases of consumption, the effect of exercise on the body temperature can only be properly estimated by taking systematic rectal temperatures. If doctors would only do this in their cases of early phthisis, they would soon see for themselves the evil results of rapid and violent exercise. Amongst the upper classes, at any rate, I am strongly inclined to think that injudicious exercise, when the patient is entirely unfit for it, has probably more do with the advance of the disease than any other factor.

In the 83rd volume of *The Medico-Chirurgical Society's Transactions* in the discussion on the Open-Air Treatment of Consumption, a well-known physician talking about early cases of consumption makes the following statement:—"These cases need something more invigorating than walking up to the top of an incline and down again. They will improve in health if they are allowed to join in such games and exercises as cricket, fives, golf, skating, rowing, bicycle riding, and so on, provided the forms of these games are properly regulated to the pathological, physical and social conditions and surroundings of the patients." I do not think it would be possible to give more pernicious advice to a case of early phthisis, but the reason of its being given is not far to seek, for almost immediately afterwards the same writer goes on to say—"frequent taking of temperatures in such cases is irksome to the patient and needless."

Varied and beautiful country walks give a very pleasant diversity of exercise even if they are not exciting, as they most certainly ought not to be. It is only a special pleader who will describe them as walking up and down an incline.

To pass on to the other two points in the Nordrach method, the fresh air and the food.

The constant fresh air is obtained in a perfectly simple manner by having the bedroom windows wide open day and night and also the windows of the dining room. Very few of the bedrooms have balconies and there are no Liege-Halle. The air is obtained in the patient's own bedroom, in the dining room at meals, and during the walks and strolls in the forest. In Dr. Walther's opinion it is best that the patients should lie down quietly in their own rooms and not, when they are resting, be congregated into Liege-Halle. When they are ill enough too to be entirely in bed he finds it best that they should be altogether secluded in their own rooms, where with properly constructed windows, they can get a complete sufficiency of fresh air.

No inclemency of weather is allowed to interfere with the windows being wide open or with the walks, which are taken in snow, rain and fog, as well as in sunshine and dry weather. Patients sit out for hours in the wet and take no harm from it except rheumatism occasionally. They never seem to catch cold except when some new-comer brings an infectious cold with him. They appear to become like the cows and sheep, who can lie out in the meadows in all weathers with impunity.

As regards the superabundance of food this is obtained at Nordrach in three large meals only and not in the frequent small meals, which is the method so many sanatoria adopt. The first meal, breakfast, is at about eight and consists of tea or coffee and in many cases half a-litre of milk, large quantities of bread and butter (three very large pats are supposed to be taken) and cold meat or pounded raw meat. Dinner is at one, and consists of three courses. The first is either fish or meat, the second meat of either animal or bird, the third fruit with biscuits, or cream ices, or puddings of various kinds, accompanied by coffee. With the first two courses are served sauces and gravies containing large quantities of butter and liberal supplies of potatoes and other vegetables. In many cases another quarter or half litre of milk is taken.

Supper is at seven, and consists of two courses, the first of some hot meat with potatoes, the second usually of some cold meat or raw ham or salt beef or cheese, accompanied by large quantities of bread and butter: occasionally a thick soup or pancakes are given instead of the second meat course. Tea is allowed at this meal and in many cases another quarter or half litre of milk. At breakfast the patients are allowed to help themselves, but at dinner and supper, with the exception of the vegetables and bread and butter, the doctor helps them with his own hands and they are obliged to finish the helps on penalty of dismissal from the sanatorium.

As regards the amount of food given per head a day at Nordrach, I am unable to make any definite statement. At the discussion at the Medico-Chirurgical Society above referred to Dr. Kingston-Fowler says, "the quantity of food, solids and liquids, prescribed to and eaten by each patient daily varies from 2 lbs. 9 oz. to 5 lbs. 5 oz., of this quantity 1 lb. 5 oz. to 1 lb. 8 oz. are solids."

In managing a sanatorium myself I allowed 4 oz. of butter a head a day, 3 pints of milk, and 2 lbs. of uncooked meat, including bone and fat, or an equivalent in fish, poultry, or game, and bread, potatoes, and other vegetables *ad libitum.*

It must not, however, be supposed that all the patients are given the same amounts of food. The amount should be varied according to their weights and general physique, and, to a certain extent, according to their digestive powers. The object of the treatment is not to make the patients enormously fat, but to give them a fair amount of fat as a reserve to fall back upon, and to make them thoroughly robust and muscular. It is impossible to give any table of weights that should be attained according to the patients' heights. The proper weight depends not only on his height, but also on his breadth and depth, his general physique. This estimation of the suitable weight must depend on the judgment of the physician. As it is approached the milk is diminished. and then left off altogether, and then the butter and potatoes are diminished. It is a great mistake to suppose that the patient should be made enormously fat. He should be made moderately fat and muscular. That, I think, is one of the great merits of the Nordrach treatment. Owing to the graduated and increasing exercise in hilly country, the muscles of the patients become firm and solid, and the fat is, as a rule, only deposited in moderate amounts. On the other hand, in the Liege-Halle, or rest-cure method of treatment, patients are apt to become enormously fat, breathless, and quite unfit for any exertion. I lay some stress upon this point, because I think it is one that has not been properly appreciated by many practitioners.

One must remember, too, that in this very ample dietary, although a gain in weight is a good sign, yet it by no means by itself shows that all is going well. With this dietary patients often gain weight rapidly who are not improving at all, or even going down hill.

As regards the actual articles of dietary used at Nordrach, I do not think they are by any means all wisely chosen or at all digestible. I suppose the food is the sort which delights the German palate, but blood and garlic sausages, raw ham, smoked raw beef, raw sprats smoked, raw salmon, stewed eels, and raw goose, are not calculated to tempt the appetites of English consumptives. Neither can I think that enormous helps of cheese are suited to delicate digestions. Perhaps more might be said for glutinous masses of pounded-up raw meat with raw eggs broken over it, but there are few patients who will relish such a dish when set before them at breakfast. Speaking for myself, though the Nordrach treatment cured me, it cured me with a great deal of digestive discomfort. With a more reasonable dietary I have found no difficulty in maintaining my weight with no discomfort at all.

In making this criticism, I do not wish it to be thought that consumptive patients should be humoured over their food and allowed to be fanciful. To do so is, I believe, a fatal mistake, and only ends in the patient eating next to nothing. It seems to me essential that the patient should be made to understand that he must eat and finish up without question what is set before him.

The diet, however, should be chosen not only with regard to its nutritive, but its digestive qualities, and should be modified in cases of great digestive disorder. At Nordrach, if the food does not suit you, you've got to suit the food. All are given it alike; neither pyrexia nor anorexia, neither vomiting nor diarrhœa, are allowed to stand in the way. No doubt this is in the main right, and is the only way of breaking through the vicious circle of anorexia, dyspepsia, progressive emaciation and weakness. These symptoms gradually disappear with increased nutrition, and it is astonishing how much food is absorbed even when the patient vomits once or twice every day. I had a patient who vomited once and generally twice nearly every day for months, and yet during that time he went up in weight from 10 st. 7 lb. to 12 st. 11½ lb., and finally got rid of his digestive disorders.

The food is given in three big meals instead of frequent small ones, in order that the digestive organs may have prolonged periods of rest between the meals, and each meal is taken after a period of not only digestive but bodily rest also. Breakfast is of course taken after the night's rest, and before dinner and supper the patients lie down for an hour in their rooms.

I have now, I think, described sufficiently fully the Nordrach method of treatment. Before concluding this paper with a few examples of the kind of results obtained by it, its successes and its limitations, it may be of interest to describe Nordrach itself briefly, and a typical day in the life of the patients there. In doing so, I shall avail myself freely of an article I wrote on the same subject for the *St. Thomas's Hospital Gazette* in 1900.

The Nordrach Sanatorium, or rather the collection of houses which forms the Sanatorium, is situated at the extreme end of a deep and narrow valley in the Baden Black Forest. Geographically the Black Forest may be considered to be divided into two parts by the Kinzig-Thal, through which the Black Forest railway line runs from Offenburg to Constance. The Nordrach Thal is a valley about eight miles long, running into the Kinzig-Thal on its northern side. The course of the valley is very nearly directly from north to south; it is narrow and winding, and surrounded by lofty pine-covered hills. The upper part of the valley, where the sanatorium is situated, is a little over 1,400 feet above sea level. The surrounding hills rise to nearly 3,000 feet. The geological formation is a species of sandstone, very porous, so that the ground dries up readily after rain. The country is richly wooded, and well watered by a number of mountain brooks. The nearest village is Nordrach, about three and a half miles distant, but there are numerous scattered cottages all through the valley.

It is well to lay some stress upon the situation of the sanatorium, because after much care and search it was chosen by its founder and conductor, Dr. Walther, as a spot that well fulfilled his ideals. In his opinion a sanatorium for consumptives should be far from a town, where there is freedom from wind and dust, where the air is pure and quiet, where the soil is fairly dry, where there is a fair amount of sunshine, and where there are hills for the patients to climb. These conditions are on the whole well fulfilled at Nordrach. In winter, however, owing to the depth and narrowness of the valley, the sun rises late and sets early, and there is somewhat of a deficiency of sunshine; but owing to the course of the valley there is more sun than one would expect. High winds are rare but occasional visitants. The climate has nothing peculiar about it, like that of Davos and other high mountain resorts, nor is it particularly equable. It is much like the English climate, but tends more to extremes of heat and cold. At the point where the sanatorium is situated the valley opens out a little: there are one or two green mountain meadows and a rushing mountain stream, and the six houses, in which the patients live or eat, are dotted about at the bottom of the valley, or on the side of the hill. Four of these houses are merely old dwelling houses slightly altered for the use of patients. The rooms have mostly two or three windows, but a few have only one. They face all ways and therefore some of them get very little sun.

The only house which has been especially built for patients faces S.S.E., and is about fifty feet up the hill. It is a long narrow building of two storeys, the lower part of stone, the upper part of wood. All the bedrooms face the front and open into a long corridor facing the back.

A typical room is as follows:—It is about 14 × 14 × 12 feet in size. The floors, ceilings, and walls consist of pine wood. There are two or sometimes three windows of moderate size, opening lengthwise like French windows, but not reaching to the ground. Above each window is a fan-light, opening inwards. The furniture consists of a bed, a commode, a table, a wardrobe, a couch, one or two chairs, a douche with hot and cold water, a wash-hand stand with hot and cold water and two basins, one to be exclusively used for washing the teeth, light curtains to the windows, a coil of hot water pipes, two mats, and a spit-cup. The sheets are not linen, but made of a material which looks very much like Jaeger sheeting, but which is, I believe, cotton. The corridor into which the rooms open is plentifully supplied with windows, which are, as a rule, opposite the doors of the rooms: a thorough through draught can thus be obtained if wanted. There are no sitting-rooms in any of the houses in which patients sleep. The only sitting-room is the dining-room, which is some way from the other houses, and built on to an old inn, which contains the kitchen and servants' offices. The dining-room is a long narrow barn-like room, with very large windows down both sides, which are taken out in the summer; at one end a portion of the room is raised like a stage, and has on it a piano and a few sofas and chairs. This is the only drawing-room and indoor meeting place the patients have. There are no Liege-Halle. Two somewhat dilapidated sheds, dotted about the garden, one of which contains some decayed deck chairs, are their sole representatives. Leading up into the woods are numbers of winding paths, plentifully sprinkled with benches, each christened with a special name, and further afield in the forest are endless wood tracks for the patients to wander along. The patients are mostly sent varying distances in the same direction, so that they have plenty of opportunities for social intercourse in their walks.

The daily life of a fairly healthy patient at Nordrach depends upon the principles of treatment I have already gone into, and is as follows:—He or she gets up about seven, and is paid a flying visit by the doctor at a quarter to eight, who looks at the temperature chart, and apportions the morning walk accordingly. He then steps down to the dining-room for breakfast. At 8.30 all the eatables are cleared away, and in winter the windows, which have been shut to keep the room warm, are flung violently open, and so by want of food, or cold, dilatory or late patients are driven forth on their walk in good time. No matter what the weather, frost or snow, or rain, or fog, out the patients stay in the woods until about 11.45, when they return to their bedrooms, take their temperatures, and lie down on their couches until dinner time at one. Before dinner the doctor pays them another flying visit and tells them what they are to do in the afternoon. Dinner, after a prolonged struggle, especially on pudding days, ends somewhere between half-past two and three. Then, after sitting about in the garden for a bit the patients drift out on their afternoon walk. This is much shorter than the morning walk so that the time is spent more in sitting than in walking, and in hot summer weather many of the patients take up hammocks into the woods and lie in them. At any time between four-thirty and six the patients drift back again to their rooms, take their temperatures and rest till they go down to supper at seven. Before seven the doctor pays them another brief visit. Supper is finished about eight and then the day's duties are at an end. If it is summer most of the patients then sit about in the garden for a while and those, who wish to, smoke. Those musically inclined, and who have permission from the doctor, retire to the piano to play or sing. Finally, at nine, everybody goes to bed.

It is thus that a day is spent at Nordrach, and each day is practically a repetition of the other. The patients are weighed once a week, and their chests are examined once a month.

It may sound very monotonous but with pleasant companions and in pleasant weather the time passes happily enough. On the other hand, in the extreme cold of winter, and in time of rain and snow there is naturally a good deal to put up with and the meals are often a severe trial.

Compared to the gaieties of Davos the life is extremely peaceful and monotonous, but this peace and monotony are an essential part of the treatment. The pyrexial patients lead a still more monotonous life, confined to their beds, and, as a rule, seeing nobody but the doctor and the servants; for at Nordrach, and this I think is a great mistake, there are no nurses. Their time is spent in reading, writing, sleeping, and struggling with their meals.

In conclusion I should like briefly to say a few words about the kind of results obtained by this method. Apart from the experience I gained at Nordrach in my own person, and as a looker on I, myself, for a year and a half, managed the Rossclare sanatorium in the north west of Ireland, and while there I carried out the treatment on the Nordrach lines: the only alteration being that I tried to give more digestible food, modified not in amount but in kind for cases of severe digestive disorder; that I perhaps gave rather more medicine than at Nordrach, that the patients had the benefit of trained nurses, and that in very stormy weather I did not send them for walks but kept them under shelter.

The treatment was carried out in a large roomy house, not specially built for the purpose, and with rooms facing in all directions as at Nordrach. To give any table of results would serve no useful pupose. Cure, or rather arrest, depends not only on the treatment but on the stage at which the patient comes and the length of time which he stays.

As far as I can judge the results obtained in the wet and windy climate of Ireland were not inferior to those obtained at Nordrach, and during an extremely wet and stormy winter the patients made progress as satisfactorily as in the summer. Indeed I really believe a good climate is not nearly so important a matter as has been supposed, nor sunshine. Of course if you can have abundance of sunshine and a delicious climate so much the pleasanter, but there is no need to compass sea and land to get them. The important factor is pure air in abundance night and day, whether moisture laden or not. That is to say I believe patients living in the country might be perfectly well treated in their own homes as far as the climate goes.

I am now treating a few Northampton patients by the same method in the Northampton General Infirmary, and though they have only been under treatment as yet a short time, they are making very encouraging progress in the air of their own place.

The first three cases I mention, I have already recorded at greater length in the *Dublin Journal of Medical Science* for 1901.

Case 1.—Young lady, aged 18; ill 6 months; weight, 10 st. ¾ lb. Flabby and anæmic, but not thin; fair amount of cough; expectoration not great in amount, but laden with tubercle bacilli; temperature oscillating between 99° in the morning and and 100° at night. Extensive early infiltration of nearly the whole of the lower lobe of the left lung.

Patient made uninterrupted progress and lost her fever entirely in ten days. She was under treatment five months. When she left her weight was 11 st. 13 lbs. She was quite hardy and robust, walking four or five miles a day in all weathers; practically no cough or expectoration; no signs in lungs beyond little irregular air entry at apex of left lower lobe. Since then, for more than a year, she has been perfectly well, and is regarded by her medical attendants as cured.

Case 2.—A young lady, aged 22; ill 7 months; family history of phthisis; weight, 8 st. 4 lbs. Pale and very thin for her height, which was about 5 ft. 9 in. Extensive tubercular peritonitis, which had been recently operated on; chronic fibrosis with probably a small cavity at apex of left upper lobe, and early infiltration of apex of left lower lobe. Fairly abundant expectoration, containing numerous tubercle bacilli; hardly any pyrexia.

Patient only remained under treatment for a little under three months. When she left she weighed 10 st. 8½ lbs. She was quite hardy and robust, and able to walk four or five miles a day in all weathers. The disease in her abdomen and lungs appeared quite quiescent, but she was still expectorating tubercle bacilli. Since then, for nearly a year and a half, she has remained strong and robust, and has married (not by my advice).

Case 3.—A very nervous hypochrondriacal man, aged 46; ill 21 months; weight, 9 st. 6 lbs.; height, 5 ft. 9½ in. Looks wretchedly ill; sputum considerable in amount and laden with tubercle bacilli. Temperature varying between 99·6° and 101°. Cavity at apex of left lung of fair size, with some slight infiltration round it. Very extensive superficial tubercular ulceration of larynx, the true and false vocal chords being almost entirely destroyed, and the inter-arytenoid region ulcerated.

Larynx treated locally with lactic acid.

Patient remained under treatment not quite five months. When he left he was quite robust and able to walk four or five miles a day in all weathers. The ulceration in his larynx was completely healed, and the disease in his lungs quiescent, though the cavity was of course still present.

His after history is however a warning. He insisted on going back to work in an office in the city, where he was shut up in a close room with a number of men the greater part of the day. The result of this was that his health broke down again, and that he died nine months after leaving the sanatorium.

Case 4.—A married woman, aged 35; fairly strong family history of consumption; weight, 8 st. 13¼ lbs.; night sweats; coloured sputum with a fair number of tubercle bacilli; temperature irregular, sometimes reaching to 101° or 103°. Early infiltration of upper part of right upper lobe of lung with marked constitutional symptoms.

This patient was only able to stay under treatment two months, but being a woman of great determination, she continued the treatment at home. She is now, year and a half afterwards, apparently quite well. When I last examined her she had no signs in the lungs and no cough. She has now developed an extraordinary tendency to adiposity, and now weighs about 14 stone, despite dieting herself to get thinner.

Case 5, and the last I shall describe. I mention as an example of how much good one may do to apparently almost hopeless cases.—A man, aged 45; ill between two and three years; weight, 10 stone 7 lbs.; height, a little over 6 feet; much cough and expectoration, laden with tubercle bacilli; temperature irregular, oscillating between 99° and more in the morning, and 102° at night.

The whole of the left lung infiltrated and in the greater part consolidated; the upper part of the right upper lobe infiltrated and the apex of the right lower lobe.

Great digestive disturbance, patient vomiting once or twice nearly every day. Patient remained under treatment six months; the left lung rapidly broke down and two large cavities formed in the upper and lower lobes, but the disease did not spread in the right lung. There was much irregular pyrexia from time to time and constant vomiting When he left, his weight was 12 stone 11½ lbs.; his vomiting has since left him; the disease in his lungs has not spread, but according to his doctor's report dried up to a considerable extent, and for the last nine months he has been out and about, enjoying a very fair measure of health. No doubt he will die of the disease eventually, but, considering the condition, the amelioration of his symptoms is very remarkable.

These five cases illustrate pretty well the kind of cases one is called upon to treat. Two of them were cases of moderate severity, without complication; one of great severity without complications and two had severally the serious complications of tubercular peritonitis and tubercular laryngitis.

I might mention several other successful cases, but it must not be supposed that the treatment is always crowned with success. The results, indeed, are rarely of that almost miraculous character which the writings of some intemperate people might lead one to expect. Occasionally they are very disappointing, and a case, even though a tolerably early one, will continue to progress down hill with only a very slight retardation of the rapidity of its course. This not infrequently happens in cases with a strong family history of consumption, and despite all that has been said to the contrary of late I am perfectly certain from my own personal observation that the presence or absence of a strong family history is an enormously important element in prognosis. Apart from family history, the cases that I have found do badly are those with a tendency to persistent diarrhœa, and those in which the larynx is infected in an œdematous form, especially if the epiglottis is swollen and ulcerated.

But taking the bad with the good, the results obtained by this method of treating consumption are surprisingly satisfactory, far better, I believe, than by any other method. Whatever drugs are discovered in the future, I believe it will always form a part of the rational treatment of consumption, and it has the inestimable advantage of being perfectly feasible in our own indifferent climate. Moreover, it has the great excellency of rendering patients who have undergone it far more hardy than they ever were in their lives before.

The great difficulty is with the after treatment Even with the most satisfactory cases the same kind of life should be continued, as far as possible, for about two years after the cessation of all symptoms. With the poor this is almost an insuperable difficulty. It is to be hoped not only that numerous pulmonary sanatoria will arise throughout the length and breadth of England, but that also it may be possible to establish colonies for convalescents somewhat after the nature of epileptic colonies, where they may be able to do suitable work under suitable surroundings.

SURGICAL ABSTRACTS.

BY LEONARD GAMGEE, F.R.C.S. ENG.,

The Treatment of Tubercular Glandular Affections. (Proceedings of the French Congress of Surgery. *Revue de Chirurgie*, November, 1901.)

This was one of the main subjects for discussion, and was introduced by Broca, who in the first place dwelt upon the importance of good food and of sea-air. He recognises three means of local treatment :—

1. By the use of interstitial injections, of which he considers that two only are of use, namely, iodoformised ether and camphorated naphthol, and of these he prefers the former. This treatment by injection seems a favourite one with French surgeons. Berger, for instance, advocates its use in the case of suppurating tubercular cervical glands. He repeats the injection three or four times; and if, during the treatment, the skin inflames, he punctures with a tenotome, introduces a small curette through the puncture and gently scrapes. After expulsion of the contents, he washes out with sterilised saline solution and then injects with iodoformised ether. But there are objections to treatment by injection, as instanced by Reynier,

who has more than once seen sloughing of the skin caused. Péraire brought forward another objection to this form of treatment, namely, that the periadenitis caused by it renders subsequent enucleation, which may be necessary, most dfficult.

2. *Extirpation.* While considering that injection is the treatment for choice, when pockets of pus are present; yet if there are many glands involved, more especially if there are fistulæ and caseous foci present, Broca prefers extirpation. In doing this, he first exposes the great vessels and nerves, as a clear view of them prevents their being wounded. After removal of the glands, if there was pus present, if there were fistulæ, or if the glands have broken down in being taken out, he advises that the surface of the wound should be touched with a 10 per cent. solution of chloride of zinc. Berger advocates extirpation only when the glands are still solid, and he puts down the recurrences after operation as numbering at least 30 per cent. Boeckel differed in that he places extirpation in the front rank as a form of curative treatment.

3. *Scraping.* In suitable cases, this is a favourite form of treatment among English surgeons, and it is a method which, when thoroughly and patiently carried out, meets with considerable success. Yet French surgeons seem almost unanimous in condemning it. For instance, Broca says that scraping should only be done as a last resort, since extirpation is nearly always possible. Again, Broeckel objects to scraping on the grounds that an ugly scar is produced, and that there is a risk of the dissemination of tubercle bacilli.

Thyroidectomy (Proceedings of the German Congress of Surgery, 1901). *Revue de Chirurgie*, Nov., 1901.

Kocher gives an account of his second series of 1,000 thyroidectomies and, in doing so, remarks that thyroidectomy is justifiable not only in the case of malignant goitres and of those benign ones which cause difficulty of breathing; but also in the case of a great number of parenchymatous goitres, which have resisted medical treatment. As a general rule, in benign cases, he removes one half of the gland. The mortality in this series of 1,000 cases is 24·5 per cent. in cases of malignant goitres, and ·4 per cent, in cases of benign ones. Kocher attaches great importance to the employment of rigid asepsis, without using any antiseptic liquid, and of local anæsthesia by means of cocaine.

Intra-thoracic goitres are the most difficult to excise. He recalls instances of these, in which no tumour could be felt in the neck and in these cases the goitre is hidden and it may be quite impossible to diagnose its presence. Often the subjects of it are treated for asthma, more especially as they have attacks of difficulty of breathing, separated by intervals in which respiration is quite easy. In addition to this, which may be called the pulmonary form of bronchoceles, there also exists a mediastinal form, which is characterised by the signs of pressure on veins and may be accompanied by exophthalmos.

Finally, there is the tracheal form, the diagnosis of which is, of course, quite easy. Kraske related that he had done 400 thyroidectomies with a mortality of ·5 per cent.

As regards the non-operative treatment of bronchocele, Kocher says that phosphorous seems to have a good effect, but that further trial is required. Kraske strongly disapproves of the administration of thyroid extract, for he holds that it is dangerous and quite powerless to reduce the size of a goitre.

ABDOMINAL SURGERY.

The Surgery of the Stomach. (French and German Congresses of Surgery, *Revue de Chirurgie.* Nov., 1901).

It is the custom for continental surgeons to operate for chronic affections of the stomach much more readily than is the case in this country. Monprofit considers that the indications for gastro-enterostomy are daily becoming more numerous and that, as time goes on, it will be considered that the surgical treatment of chronic affections of the stomach is the only one to be recommended. As a proof of the numerous conditions for which operations on the stomach are performed, it may be stated that

Terrier has performed gastro-enterostomy fifteen times, seven times for malignant disease and eight times for non-malignant disease of the stomach. As examples of the non-malignant conditions may be cited gastralgia with hyperacidity, dilatation, ulcer and alcoholic gastritis. In these fifteen cases he has had one death and he has always performed the posterior trans-mesocolic operation. He advises that before operation the stomach should be prepared by being repeatedly washed out and that the process should be repeated after operation. To combat shock he relies chiefly on sub-cutaneous or intravenous injection of saline fluid, one to two litres being injected in twenty-four hours. The after results, as regards the functions of the stomach have been most satisfactory, even in the malignant cases, the cessation of symptoms being almost immediate. Pantaloin has had an even smaller percentage of deaths than Terrier, for he has done gastro-enterostomy twenty-five times with only one death. The objection has been raised against the posterior trans-mesocolic operation that intestinal obstruction may afterwards be caused by the loop of jejunum being nipped by the edges of the opening in the mesocolon. The speakers at the French Congress seem all to have operated by this method, but do not appear to have met with this after-complication. Monprofit certainly met with one case of intestinal obstruction following the operation, but this was due to the fact that some loops of small intestine had become adherent to each other and to the abdominal wall in the neighbourhood of the scar.

The Surgical Treatment of Vertical Dislocation of the Stomach was a subject discussed by Vantrin, who described three varieties of the affection :—

1. The uncomplicated vertical dislocation due to injury, the wearing of tight corsets and feebleness of the suspensory ligaments.

2. Accompanying a general ptosis of the abdominal contents.

3. Complicating pyloric stenosis.

It has been his custom to treat the first variety by performing the operation of gastrorraphy, and to treat the third variety by gastro-enterostomy.

Intestinal Surgery. (*Revue de Chirurgie*, November, 1901.)

Intestinal anastomosis in muco-membranous colitis. Phocas relates the case of a child 5½ years old, who had been ill for a month. There was great abdominal pain, together with vomiting and signs of incomplete intestinal obstruction, and a tumour, varying in size at different times, could be felt above the umbilicus. Phocas opened the abdomen and found that there was a colitis involving the cœcum, the ascending colon, and part of the descending colon. The affected intestine was swollen and hard, and the peritoneum over it was inflamed. An anastomosis was made between the lower end of the ileum and the transverse colon, and the patient made an excellent recovery.

Appendicitis. (*Revue de Chirurgie*, Nov., 1901.)

In referring to the opinion, now apparently largely held by American surgeons, that early operation in practically all cases of appendicitis is to be recommended, Sonnenberg holds that immediate operation is necessary only in cases of gangrenous appendicitis. These cases are characterised by the fact that adhesions, if they exist at all, do not prevent the spread of infection to the general peritoneal cavity, and they can be recognised by the great amount of constitutional disturbance, great rapidity of pulse, and very marked pain and resistance in the right iliac region. Perforating appendicitis, he states, generally forms a localised abscess, and the necessity for operation only shows itself gradually. Riese advocates operation in all cases where there is good reason for thinking that the appendix is gangrenous, or has perforated, and also in all cases in which a swelling is present. Delbet, Rehn, and Sprengel advocate a much more radical treatment, in that they advise operation directly the diagnosis of appendicitis has been made, and, moreover, they break down the adhesions and remove the appendix in all cases, even when an abscess is present.

The Surgery of the Spleen. (*Revue de Chirurgie*, Nov., 1901).

Février classifies the various conditions of the spleen, in which surgical interference may be necessary, as follows:—

1. Injuries.
2. Abscess.
3. Cysts.
4. Hypertrophy: (*a*) Leucocythæmia; (*b*) Idiopathic; (*c*) Malarial; (*d*) Tubercular.
5. Displacement, with or without torsion of the pedicle.

Février has collected records of 56 cases of ruptured spleen, in 46 of which splenectomy was done with a mortality of 50 per cent. He has also collected records of 30 cases of traumatic hernia of the spleen, all successfully treated by splenectomy. For the treatment of hydatid cysts of the spleen he advocates splenectomy, puncture and injection being inadequate and dangerous, while incision with marsupialisation is a very slow method of cure. But, when there are many firm adhesions present, incision with marsupialisation is the only possible means of treatment. Splenectomy for leucocythæmic spleen is most unsuccessful according to the same authority, for he has collected records of 42 cases with only four recoveries and, as a matter of fact, in two of these four the nature of the case was doubtful. In all the others death from hæmorrhage rapidly took place.

Février also relates records of 86 cases of splenectomy for malarial spleen. All these have been operated on within the last ten years, the mortality being 17·4 per cent. The operation should be done only in favourable cases and, above all, should be avoided, where there are many dense adhesions. After the operation, all the symptoms due to the enlargement of the spleen disappear. It is true that the periodical attacks of fever may recur; but the operation should be done only in those cases, in which the patient's inability to lead an active life is due, not to the fact that he has malaria, but to his having one of the consequences of malaria, viz., an enlargement of the spleen.

By idiopathic enlargement of the spleen, Février means those cases, in which the enlargement is not due to leucocythæmia or malaria. He has collected sixteen cases of splenectomy for this condition with three deaths.

Cases of Displacement of the Spleen he divides into two classes:—

1. When the spleen is simply movable, but of normal size. In cases like this fixation has been done, not yet in enough instances to draw definite conclusions from, but with encouraging results.

2. Cases of enlarged, movable spleen, with or without torsion of the pedicle. Thirteen cases of splenectomy for this condition have been recorded in the last ten years, with three deaths.

Léonté has performed splenectomy altogether twelve times: ten times for malarial spleen, and twice for displaced spleen. In these twelve cases there were four deaths. He advises operation according to the following plan:—The incision should be made to the left of the middle line. The hilum should at once be sought for and the pedicle transfixed, the artery and vein being tied separately. Before the ligatures are tied, the spleen should be squeezed with the hand, so that as much blood as possible may be expressed from it. After ligature of the pedicle, the adhesions and ligaments should be separated, and, when necessary, ligatured. The spleen is then removed. By ligaturing the pedicle before the adhesions are separated hæmorrhage, which is otherwise free, is to a large extent prevented.

REPORTS OF SOCIETIES.

British Medical Association.

Birmingham and Midland Counties Branch.

Session 1901-1902.

The Fourth Ordinary Meeting of the Session was held in the Birmingham Medical Institute, on January 9th, 1902, the President, Dr. E. Malins, being in the Chair.

Forty-seven members were present

Confirmation of Minutes.—The Minutes of the previous Meeting were read, confirmed, and signed.

Election of Members.—The following Members of the Association were elected Members of the Branch, namely—

D. V. M. Adams, M.B., Workhouse Infirmary, Birmingham, nominated by Mr. Morrison; George Bryce, 299, Wheeler street, Lozells, nominated by Mr. Morrison; H. Jessop, Workhouse Infirmary, Birmingham, nominated by Dr. Kauffmann; G. H. Tomlinson, M.B., Handsworth Wood, nominated by Mr. Morrison.

Paper.—Dr. A. Foxwell read a paper entitled "Some points in the prognosis and treatment of Dilated Hearts." In the discussion which followed, Mr. Alfred Freer, Dr. Saundby, Dr. Stacey Wilson, and Mr. R. A. Newton took part, and Dr. Foxwell replied.

Paper.—Dr. W. A. Potts read a paper on "The Auto-intoxications of Pregnancy," under the following headings:—"Auto-intoxication as a cause of disease; disturbances of the alimentary system during pregnancy; eclampsia; the administration of thyroid extract during pregnancy." Remarks were made by Dr. Thomas Wilson and the President, and Dr. Potts replied.

MIDLAND MEDICAL SOCIETY.

The Fifth Ordinary Meeting was held on Wednesday, Jan. 22, 1902, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the chair.

Diffuse Symmetrical Scleroderma—Mr. Haslam showed a woman, æt. 37, the subject of this condition. It affected the skin of the face, neck, thorax and to a less extent the upper extremities. It came on about six months ago and reached its maximum intensity in five months, since which time it has improved. The case was a good example of that form of the disease, which begins as a leathery induration and not as an œdema.

Carcinoma of Sigmoid Flexure in a boy, æt. 15.—Mr. F. Marsh showed this specimen and related the history of the case. The patient, C. H., a well developed healthy looking boy, was admitted into the Queen's hospital, on June 26, 1901, for pain in epigastrium and passing of blood with his fæces. The first symptom was the passing of blood which began six months prior to his admission. It was generally dark in colour and frequently mixed with mucus. The pain, which was intermittent and referred to epigastrium, only commenced a month ago. Until then the bowels acted fairly regularly with the help of aperients, but during this last month they acted frequently—sometimes only blood and slime, sometimes scybala, sometimes loose evacuations being passed. There was no tenesmus nor frequent micturition. There has been a slight loss of weight, 5 lbs. in two months.

On examination, the abdomen was not found distended, resonance was normal, and no tumour could be palpated. Per rectum an indistinct fulness could be felt to the left in the recto-vesical pouch. Blood and mucus followed the withdrawal of the finger. On July 5th, a median incision was made and a growth found in the lower three inches of the sigmoid, most extensive on posterior aspect and completely encircling the gut at the lower end. Several of the mesenteric glands were enlarged. The growth was excised with a margin of healthy bowel, the mesenteric glands were removed, and with considerable difficulty the two ends of intestine, the middle of sigmoid and upper end of rectum were joined, as accurately as the position of the parts would allow, with Lembert sutures. A drainage tube was put on either side to the site of union on the floor of the pelvis, and for a few days a small quantity of fluid fæces came through one of them. A good recovery was made, the bowels acted regularly without difficulty and the boy went home well on August 7th. The line of union could be felt per rectum, and there was no constriction nor sign of recurrence. Microscopical examination showed that the growth was a columnar carcinoma. The case was shown as interesting from a diagnostic point of view—the age being an early one for sigmoid carcinoma—and as a satisfactory result of excision and anastomosis. The subsequent history, however, pointed to recurrence, as the brother of the boy reported some four months after the operation that there was a return of blood in the fæces, but Mr. Marsh had not had an opportunity of examining him.

Pyonephrosis.—Mr. Christopher Martin showed a kidney removed on Feb. 11th for calculous pyonephrosis, from a woman, æt. 40. She had had for 15 years symptoms of stone in the right kidney (viz., pyuria, pain in the right loin, renal colic), and during this time she had had six normal confinements. No mass was to be felt, as the patient was very short and stout, but there was marked tenderness on deep pressure in the right renal region. There was no hæmaturia. The kidney was removed through a long horizontal incision beginning posteriorly at the erector spinæ and reaching anteriorly nearly to the rectus abdominis. This incision enables the surgeon to remove a big kidney without opening the peritoneum. The patient bore the operation well and made an uninterrupted recovery. The kidney was much enlarged and distended, with loculi containing pus. The pelvis and calyces were filled with large branching calculi.

Paper.—Mr. Hall-Edwards read a paper, illustrated by lantern slides, on "Experiences with the Imperial Yeomanry Hospital in South Africa."

REVIEWS.

NOTHNAGEL'S ENCYCLOPEDIA OF PRACTICAL MEDICINE.*

In publishing a translation of Professor Nothnagel's well-known Encylopedia of Medicine, Messrs. W. B. Saunders and Company are rendering a very valuable service to English and American physicians. The work may fairly be described as the leading German text-book on medicine, and takes the same place in that country as is occupied here by Prof. Clifford Allbutt's recently completed System. The Encylopedia is to be published in ten volumes, the first of which has just appeared.

This first volume is an admirable piece of work. It contains 628 large octavo pages, 472 of which are devoted to the subject of typhoid fever, and we can certainly say that for completeness and detail no other monograph on that subject can compare with it. The rest of the book deals with typhus fever. The original is from the pen of Prof. Curschmann, who has had immense experience of these diseases and has availed himself to the full of his opportunities of study. The translation has been carried out with marked success by Prof. Osler, with the assistance of Dr. Cole, and these writers with the consent of Prof. Curschmann, have incorporated all the new work which has been done since the publication of the last German edition. The additions mainly concern the pathology and bacteriology of typhoid fever, but in addition the chapter on perforation and peritonitis has, we learn from the preface, been practically rewritten.

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* Nothnagel's Encyclopedia of Practical Medicine. Typhoid Fever and Typhus Fever. By Dr. H. Curschmann, Professor of Medicine, Leipzig. Edited with additions. by William Osler, M.D., Professor of the Principles and Practice of Medicine, Johns Hopkins University, Baltimore Authorised Translation from the German, under the Editorial Supervision of Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Philadelphia and London : W. B. Saunders and Company. 1902.

The monograph on typhoid fever opens with a very full and useful account of its etiology, including the individual and external factors which favour the dissemination of the disease. Amongst these, we note that neither the author nor his translators have included the eating of infected oysters, an omission which may perhaps be taken as a comforting indication of their disbelief in the popular view of this matter. The section on pathology is also admirably complete. Especially interesting is the discussion of the relation of the lesions of the various organs to the specific bacilli, and the marked tendency of modern bacteriological investigation to show the specific nature of the majority of these lesions is strikingly displayed. We note that the writers do not consider the occurrence of attacks of typhoid fever without bowel lesions to be yet definitely proved.

Admirable as are the two sections already noticed, that on the symptoms and course of the disease stand out still more prominently. Here comes in the special feature of Prof. Curschmann's work, for he has subjected to the most minute study all the symptoms of the attack, with their frequent and puzzling variations. The study is in the highest degree instructive, even to those whose experience of typhoid fever is considerable, and we think that few physicians would fail to find matter for thought in its pages. One or two individual points only can be noted, but especial reference must be made to the elaborate investigation of the temperature and pulse in all stages of the disease from the incubation period onwards. The description of the unusual types of typhoid fever is again very instructive, and we note with some interest that Prof. Curschmann is inclined to attribute the typical "abortive" forms of the disease to absorption of the typhoid toxins without infection by the living organisms themselves. The section on peritonitis and perforation is, as has been already said, from the pen of the translators, and they are to be congratulated on the excellence of the chapter. They appear, however, to be somewhat over-cautious in doubting the occurrence of peritonitis without actual perforation. We have recently come across a case of typhoid fever in which the patient died with considerable general peritonitis, but in which the most careful search failed to discover any leaking point by which the peritoneum could have become contaminated Finally, we were disappointed at the meagre character of the reference to the disorder known as the "typhoid spine." Prof. Osler has himself written an interesting account of this curious affection, and we should have expected some amplification on his part of the original notice.

Passing over the sections on diagnosis and prophylaxis, we have nothing but praise to give to that which is concerned with the treatment of the disease. We notice that Prof. Curschmann speaks with distinct disapproval of the cold bath treatment as advocated in all its rigour by Brand and formerly carried out by the author himself. He is, however, a firm believer in the efficacy of bathing, but believes in the use of tepid water only, rarely cooled down more than a few degrees after the immersion of the patient. Especially does he urge the adoption of baths in cases in which there are symptoms of profound intoxication, and he advises their application as soon as these symptoms make their appearance. From two to four baths in the twenty-four hours are considered an ample allowance. The main contra-indications are hæmorrhage, even of slight degree, cardiac weakness, arterio-sclerosis, incompletely compensated valvular lesions of the heart, considerable pleuritic effusion, phlebitis and laryngeal lesions. Apart from the use of baths, the author avails himself to some extent of antipyrectic drugs. His rules for diet are admirable, and are fully described, and we are glad to see that, whilst allowing a certain amount of variation in the food, he does not advocate the practice of giving solid nourishment till a comparatively late stage of convalescence. He relies on hypodermic injections of camphor or caffein in cases in which strong stimulation becomes necessary.

The latter half of the book deals with typhus fever in the same thorough manner, but our own experience of the disease is nil, and we cannot attempt any detailed criticism. Here

Prof. Osler has, we gather, found but little to add to the original account.

The work of translation has been admirably carried out, and we have but rarely been reminded of the fact that the book was originally written in another language. Here and there a clumsy sentence is to be noted, and in one part of the book there is a curious tendency to a modified use of the double negative, which is at times a little perplexing. Moreover, occasionally the translators allow themselves the use of words, such, for example, as "fugaciousness," which may be the counterpart of the German expressions, but are certainly not English. Once only, namely, on page 355, have we detected a slip in the construction of a sentence.

We can hardly imagine that successive volumes can treat the remaining diseases with the same fulness which marks the first of the series. But even if those yet to appear fall below the standard set by these two monographs, the work must still be well worth possessing.

A LABORATORY HANDBOOK OF URINE ANALYSIS AND PHYSIOLOGICAL CHEMISTRY.*

THIS book differs from the handbooks of urine analysis which have been reviewed within the last year or two in this Journal, in that it confines itself strictly to the chemistry of the subject, and makes no reference to the morbid conditions which are responsible for the appearance of abnormal constituents in the urine. This is on the whole an advantage, for there is but little to be gained by including clinical matters which can be more satisfactorily learnt from the ordinary books on medicine and surgery. The book is further written more definitely from the point of view of clinical examination than many of those above mentioned, The main adverse criticism which is to be made is that it fails to include some important details—for example, the fallacies of the Fehling test for sugar, and of some of the tests for albumen, together with the means of overcoming these difficulties. In other respects, the information is full, and the workmanship of the whole book is distinctly good.

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* A Laboratory Handbook of Urine Analysis and Physiological Chemistry. By Charles G. L. Wolf, B.A., M.D., Instructor in Physiological Chemistry, Cornell University Medical College, New York. Philadelphia and London: W. B. Saunders & Company. 1901.

In addition to the chemical examination of the urine, that of the stomach contents and the products of digestion is also included. This part of the book is very satisfactory, and a knowledge of the methods described should be in the possession of every practitioner of medicine. We think that the book is a useful one for reference, and trust that it will be a little amplified in some respects in later editions.

CLINICAL LECTURES ON THE VARIOUS FORMS OF INTRA-ABDOMINAL SUPPURATION.*

THE first four of Mr. Tubby's excellent Clinical Lectures on intra-abdominal suppuration are devoted to the subject of appendicitis. The author rightly remarks at the outset on the impossibility of rigidly classifying the clinical varieties of this disease, with its numerous variations and extraordinary irregularities. But he has succeeded in giving a very clear clinical picture of its main types. Besides the clinical aspects, he deals with the anatomy, causation and treatment of the disease. We notice that in the matter of etiology Mr. Tubby does not refer to the question of the occurrence of epidemics of appendicitis; yet there is much evidence in favour of the view that such outbreaks do occur, and we fancy that in Birmingham at any rate we have recently been passing through a period of increased liability to the disease.

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* Clinical Lectures on the Various Forms of Intra-Abdominal Suppuration. By A. H. Tubby, M.S., F.R.C.S., Surgeon to the Westminster Hospital, and Senior Surgeon to the Evelina Hospital for Children. London: The Medical Publishing Company, Ltd. 1901.

The three remaining lectures deal with subdiaphragmatic abscess, pelvic suppuration and tubercular peritonitis, and general peritonitis. Each gives a really excellent account of its subject, and we can confidently recommend them as admirable clinical demonstrations of the matters of which they treat.

A MANUAL OF THE PRACTICE OF MEDICINE.*

In reviewing the first edition of this book in 1896, we spoke favourably of its plan and execution. It is a good type of text-book, and the new edition, which has been brought well up to date, is in many respects a distinct improvement on its predecessor. Considerable care has been taken with the process of revision, and several of the articles have been largely re-written, whilst other new sections have been added. Especial attention has been given to the revision of the section on Diseases of the Digestive System, which has to a considerable extent been written afresh. The article on Malaria is also entirely new, and gives a good account of its subject. The book is excellently illustrated, many of the plates and engravings being much above the average of those usually found in text-books of medicine.

Medical Institue.

We are asked by the Committee of the Birmingham Medical Institute to state that a certain number of duplicate books are on sale. The books can be seen and information as to price obtained on application to the Librarian.

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* A Manual of the Practice of Medicine. By George Roe Lockwood, M.D., Attending Physician to Bellevue Hospital, New York. Second Edition, Revised. Philadelphia and London: W. B. Saunders and Co. 1901.

University of Birmingham.

FACULTY OF MEDICINE.

EXAMINATION for the Diploma in Public Health, January, 1902.

PASS LIST.

Parts I. and II.—Thomas Edward Dyson.

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New Books, etc., Received.

From H. K. Lewis—
- Rough Notes on Remedies. By WM. MURRAY, M.D., F.R.C.P.
- Handbook of Bacteriological Diagnosis for Practitioners. By W. D'ESTE EMERY, M.D., B.SC., Lond.

From Young J. Pentland—
- The Edinburgh Medical Journal. Edited by G. A. GIBSON, M.D., F.R.C.P., Ed. New Series, Vol. x.

From W. B. Saunders and Company—
- A Text-Book of Pathology. Edited by LUDVIG HEKTOEN, M.D., and DAVID RIESMAN, M.D. Vols. i. and ii.

From John Wright and Co.—

Elementary Bandaging and Surgical Dressing. By the late WALTER PYE, F.R.C.S. Revised by THOS. CARWARDINE, M.S., F.R.C.S. Ninth Edition.

First Aid to the Injured and Sick. By F. J. WARWICK, B.A., M.B., Cantab., M.R.C.S., L.S.A., and A. C. TUNSTALL, M.D., F.R.C.S., Ed.

From Sherratt and Hughes—

The Bradshaw Lecture on Prognosis in Relation to Disease of the Nervous System. By JUDSON S. BURY, M.D., Lond., F.R.C.P.

From the Washington Government Printing Office—

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Second Series. Vol. vi.

From Edward Arnold—

Human Embryology and Morphology. By ARTHUR KEITH, M.D. (Aberdeen), F.R.C.S.

From the Century Printing Co. Ltd.—

The War against Consumption. By DENNIS VINRACE, M.R.C.S., L S.A. Revised by JOHN H. VINRACE, M.B. Lond., M.R.C.P.

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THE

BIRMINGHAM MEDICAL REVIEW.

MARCH, 1902.

ORIGINAL COMMUNICATIONS.

THE CLINICAL SIGNIFICANCE OF LEUCOCYTOSIS.*

BY JOHN T. HEWETSON, M.D. (EDIN.), F.R.C.S. (ENG.).

In this country clinical examinations of the blood have hitherto been employed almost exclusively by the physician, and even then only in conditions known as "diseases of the blood." In American and Continental hospitals, hæmatological examinations have been adopted as a clinical method with a much wider application. We are beginning to realise, however, that such examinations can give information to the physician in diseases other than "diseases of the blood," and further, that they can be of material value to the surgeon. Quite three-fourths of my observations upon this subject were made in surgical maladies, and none of the medical cases examined were suffering from any of the so-called "diseases of the blood." I think that British surgeons would do well to follow their American contemporaries in this matter of blood examinations. Nothing is lost by exhaustive and careful clinical method. In the large American hospitals, the blood is examined by house-surgeons, or hæmatologists, in a very large number of clinical conditions, from which the most valuable statistics can be compiled in the course of a few years, not to mention the immediate value in diagnosis which frequently follows. It is the blood which sustains the vitality of every organ in the body; through it the products of constructive and destructive metabolism are carried to their respective destinations. Should it therefore be surprising, given morbid processes seriously affecting this metabolism, that a careful study of the hæmic elements should prove of value to the clinician? We have long known of the amœboid movements of leucocytes, of their phagocytic action upon bacteria, of their special secretory qualities, and, above all, of the important part they play in all inflammations. Is it not then a trifle surprising that their careful enumeration, both quantitatively and qualitatively, has not been adopted by the surgeon at an earlier date?

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* A portion of an M.D. Thesis.

The necessary technique for such examinations has been improved very considerably during the last ten years, and a very satisfactory degree of accuracy can be claimed for our results at the present time. To men like Ehrlich, Thoma, Hayem, and many others, we owe much, not only for their scientific genius, their emphatic pathological conclusions and their brilliant histological results, but also for that scientific accuracy and untiring perseverance which cannot fail to bear fruit in the younger generation of workers. A complete examination of the blood occupies so much time that it is almost impossible for the busy practitioner to carry it out with any degree of frequency or regularity. With this feeling in my mind, I have worked at the subject of "leucocytosis," in order to determine how much information of clinical value is likely to be obtained from such a partial examination as simple enumeration of the white blood corpuscles It is far from my intention to suggest that the examinations of red corpuscles, hæmoglobin, alkalinity and freezing point of blood are unimportant; they are all important and growing more so every day, yet to the busy practitioner they are less possible, and I venture to think less valuable than estimations of the leucocytes.

Every medical practitioner accustomed to the use of the microscope will have no difficulty in counting white blood corpuscles, and seeing that the whole process can be done in the short time of ten or fifteen minutes, it ought to be possible to the busiest.

Compared with leucocytes, the erythrocytes are much less liable to rapid change in their numerical value. It is true that in such diseases as pyæmia, septicæmia, and extensive suppurations, we get moderately rapid decrease in the red blood corpuscles, but even here it takes days and even weeks to produce a relatively large diminution. With leucocytes it is very different. We rarely observe a leucopenia in any disease; if not normal, it is generally a leucocytosis This increase occurs with great rapidity, so much so that in certain pathological conditions the average number of white blood corpuscles may be multiplied several times within a few hours of the onset of the disease, and as a result of effective treatment the return to normal may be correspondingly rapid. Such a leucocytosis must have some clinical significance, and some definite purpose to serve. Its great constancy in certain diseases precludes the possibility of it being accidental, or a mere coincidence.

We cannot but regard leucocytosis as an established clinical phenomenon, occurring and disappearing under definite pathological conditions.

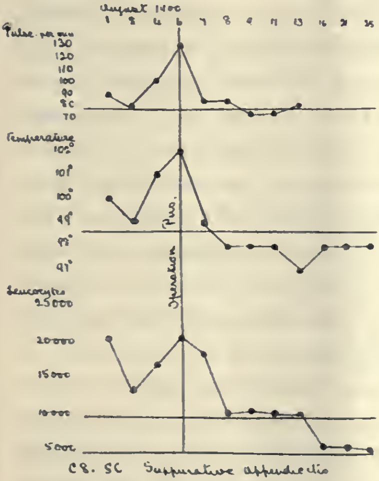


CHART I.

The charts I hope to submit for observation later will prove that there is a leucocyte curve quite as positive in its value as that of the temperature or pulse. At present I will content myself with showing two charts.

Chart I. is that of a case of suppurative appendicitis, illustrating the pulse, temperature, and leucocyte curves, before and after operation.

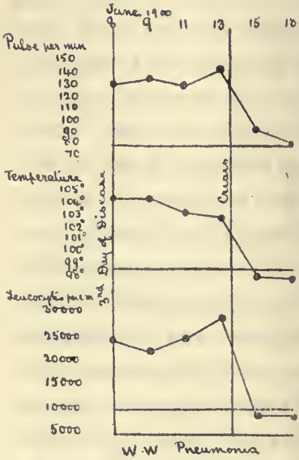


CHART II.

Chart II. is that of a case of uncomplicated pneumonia, showing similar curves up to and following the crisis.

I can furnish many examples in which it is clearly proved that the leucocyte numeral is on the whole a more delicate indicator of underlying disease than either the temperature or the pulse. That is not, however, the object I have in view. Examinations of the temperature and pulse are quite as valuable to the surgeon as they are to the physician; they supply valuable information in the great majority of acute clinical conditions whether medical or surgical, and in certain cases their value is much greater than in others. In all clinical work, heat value and pulse rate are watched and charted with the greatest regularity. The clinician knows by experience their great value in diagnosis; he has long learned to rely upon their information, and to regard them as honoured and well tried physical signs. Their careful record has prevented many mistakes, spared many needless days of professional anxiety, and indeed been the means of saving many a patient from an early grave. In like manner I feel sure that regular enumeration of leucocytes would be of great value to the medical practitioner. The same frequency of examination is not necessary, such would involve too much of his time, and I can assure him that he would be amply repaid for the little additional trouble incurred by moderately regular leucocyte estimations.

Much has already been done to show that regular hæmatological examinations are worthy of the utmost attention; their assistance in the diagnosis and prognosis of certain diseases other than blood diseases proper, has been proved beyond a doubt.

I feel confident that the day is not far distant when it will be a regular routine both in hospital and private practice to make a careful examination of the leucocytes in a large group of clinical cases. If this were done with the same regularity, though not necessarily with the same frequency as we examine the temperature and pulse, many undiagnosed conditions revealed in the *post-mortem* room would be discovered during life and successfully dealt with. Are our clinical methods so perfect that they cannot be improved, and are there still no cases of such profound obscurity, such baffling difficulty, that a ray of light is not welcome from any scientific source? I firmly believe that in many such cases signal assistance might be obtained from careful leucocyte estimations.

No single clinical method or physical sign can be regarded as infallible, and I do not for one moment wish to imply that the examination of the white blood corpuscles is an all important one. I wish it to be considered in conjunction with other physical signs, and as such, I believe it will prove to be a valuable adjunct to our present clinical methods. A perfect clinical picture is obtained by the careful study of the numerous symptoms and physical signs which a complete clinical examination reveals. For the success of such a picture, however, a very accurate sense of proportion is absolutely necessary. A blood examination may unfold to the clinician a part of that picture, sometimes a large part, at others a small one; in any case it is only by prolonged experience, by repeated records, that such can be interpreted aright.

I have striven at all times to pursue my investigations with a perfectly open mind, never allowing the current opinions as to the condition of the patient to influence my results. During my observations, which were made in 1900, I carried out upwards of 1,500 leucocyte counts, practically all of which were furnished by cases in the Birmingham General Hospital. In many of my cases I counted the red corpuscles and estimated the amount of hæmoglobin, but I have purposely omitted to record the results of these examinations in order to prove that leucocyte estimation alone is a clinical method of the greatest value.

Seeing then that this limited examination of the blood is so simple, involving such a small expenditure of time, and certainly within the capacity of every busy practitioner, I hope that these records may in some measure tend to stimulate young practitioners of our own school to work at this subject and thus to decide for themselves its true clinical value.

The reports of bacteriological examinations, most of which I was permitted to carry out in the hospital laboratory, are introduced into this paper merely to throw further light upon the particular case of suppuration, meningitis, etc., whose blood I was investigating.

Pulse rate, respiratory rate per minute, and degree of temperature were taken from the chart by the bedside of each patient. They represent the highest point reached by temperature, pulse, and respiration at any time during the day upon which the corresponding leucocyte count was taken. They have been placed in the record to shew as briefly as possible the general state of the patient and further to bear comparison with the approximately simultaneous position of the leucocyte curve.

Operations and *post-mortems* were generally witnessed by me in person, failing which I copied the results from the operation and *post-mortem* books respectively. I saw sections of all tumours spoken of in the record. Anæsthetics were copied from the anæsthetic book.

To the Honorary Staff of the Birmingham General Hospital I am deeply indebted for the ready consent given me to pursue my observations and for the great interest they manifested in my results. To the Resident Staff of the year 1900, I tender my sincere thanks for the many facilities they afforded me in reporting cases, soon after admission, in which I was specially interested.

Before proceeding to results, I should just like to emphasise several points in the general technique of leucocyte counting.

The hæmocytometer used was the Thoma Zeiss. I possessed several "white pipettes" which enabled me to get through my daily observations more rapidly. The popular idea that the glass ball in the bulb of the Thoma Zeiss is a source of error, due to adherence of leucocytes, can, I think, be entirely overcome by thorough cleanliness. It was my habit to run through the pipettes a quantity of strong nitric acid every few days, and to digest them every week with dilute hydrochloric acid and pepsin. This weekly routine is of course quite unnecessary to the man who is using his pipette less frequently. Having the pipette perfectly dry, so that the glass ball moves freely, is an essential condition before any examination can be made.

The best strength of diluting fluid is ·3 or ·5 per cent. acetic acid; in this, white blood corpuscles will remain quite well preserved for twenty-four or forty-eight hours. The addition of methyl-violet gives little or no advantage, and it soon stains the pipettes. Stronger solutions of acetic acid disintegrate the white corpuscles, so that it is impossible to keep a full pipette long before making a count: it is further liable to produce clumping or balling of the leucocytes, a condition which entirely disqualifies any result. If, on the other hand, the solution is more dilute, taking of the red corpuscles is prevented, so that it is a very difficult matter to count the leucocytes. The needle used for the puncture ought to have a perfect point: Hagedorn or large triangular needles are very good. With a good needle it is quite possible to examine the blood of a sleeping child without waking it. A single bold plunge is infinitely more merciful than numerous small pricks. Gentle rubbing of the lobe of the ear with sterilized wool just previous to the puncture, is of value in producing an active hyperæmia, and removes any gross scales that might be present. The blood on no account must be expressed from the wound; this produces a local cyanosis, which is sufficient to unduly increase the corpuscular value of the drop expressed. A dilution of the blood by twenty times is probably the most useful in counting white corpuscles, as met with in diseases apart from leucocythæmia. Should an air-bubble accidentally enter the pipette, the instrument must be cleaned and the whole process repeated. The best way to clean a pipette is to run through it, first, distilled water, and then absolute alcohol, and lastly, methylated ether. A ball air-pump is then slipped on to one end of the pipette and a stream of air is passed through it until the glass ball rolls freely within the bulb. Blood should never be allowed to dry in a pipette; to prevent such, it is advisable to clean the instrument directly the count is made. Should such a misfortune occur, nothing can be done but to digest the dried coagulum with dilute hydrochloric acid and pepsin.

In diluting the blood with acetic acid solution, vigorous suction is of advantage at first in that it sweeps the blood up from the barrel of the pipette into the bulb where the mixing alone takes place. When mark II is exactly touched by the mixture, it is advisable to shake the pipette thoroughly in order to mix the blood, so that if a drop or two should fall out in carrying it to the microscope the result is not spoiled. This spilling, however, can be avoided by holding the pipette horizontal. Agitation of the pipette in several directions for two minutes is quite sufficient. The drop to be examined is generally selected from the middle of the blood by expelling half of its contents. Clean the tip of the pipette with absorbent wool and touch the surface of the ruled plateau with the point until a sufficiently large drop has formed. I always made two counts from the same pipette, these being generally very similar in numerical value, an average was made; should they differ much, a third count was made, and the average of the two most nearly approximated was taken. Newton's rings must always be seen on the cover slip before the slide is counted, their absence usually means a dirty slide or cover slip. It is very necessary to cleanse the glass from time to time with absolute alcohol and ether.

I have not attempted to describe the general routine of my method, because in other respects it is identical with that given in text-books. I feel very confident, that provided a careful and rigid technique is adhered to, a very satisfactory measure of accuracy can be obtained by this instrument. If a man persistently uses all precaution against error, rejecting examinations in which he knows there have been mistakes, he will be amply repaid by the universal results he obtains from day to day.

Nearly all my observations upon patients were made between 9.30 a.m. and 1 p.m., breakfast was at 6 a.m., dinner at 12.30 p.m., so that digestion leucocytosis was as far as possible eliminated.

The average leucocyte count in health I take to be anything between 5,000 and 10,000 per cubic millimetre. The films for staining were made on specially prepared glass slides by means of cigarette paper. By this method large films can be obtained, and after a little practice very beautiful ones. Films on slides have an advantage over cover slip preparations, in that they can be labelled at once, a matter of great importance when you have many films to prepare in a day. They are further more easily handled during fixing and staining.

Most of my films were fixed by heat in the dry sterilizer. The heat I liked best was from 105° to 110° Centigrade for one hour. The high temperatures of 140° to 150° Centigrade, as recommended by Cabot, were not successful in my hands. After fixing with heat I invariably used Ehrlich's triacid stain. At the commencement of my investigation I had very great difficulty in obtaining good stain, and I was compelled to change it several times before my results were satisfactory. There can be no question about the brilliance of this stain, provided that you fix with the right heat. You cannot over-stain with it; your mistakes come in the fixing, not in the staining. Its results, however, are by no means perfect, for although its colour effects are so lovely, its definition is not so excellent as that of the eosine and methylene blue mixtures. The nuclei do not stain so deeply with the triacid stain, and their outline is not so distinct as in those stained with eosine and methylene blue. In making my differential counts upon my fatal cases of pneumonia, I had very great difficulty in distinguishing the exact outline of nuclei, a matter of very great importance in differentiating myelocytes from polymorphonuclear cells. Ehrlich's mixture is a very brilliant granular stain; it is this feature which largely accounts for the imperfect definition of nuclei in preparations stained by it. Then again, I had difficulty occasionally in deciding whether a cell was a coarsely granular oxyphile (eosinophile), or a finely granular oxyphile (neutrophile); the stain seemed to bring out cells transitional between the two. This may be a recommendation for it, but in the light of our present classification of leucocytes it is very disconcerting in making differential counts.

With my films fixed in formalin vapour and stained by eosine and methylene blue, I had very good results. The definition of nuclei was always good, and I had no difficulty in distinguishing coarsely granular from finely granular oxyphiles. My results by this latter method were more universal than by the Ehrlich method. A good Ehrlich, however, is better than a good eosino-methylene blue specimen.

For the general practitioner I would strongly recommend the simpler stain, especially one of those recent combinations, such as Jenner's or Leishmann's, which fix and stain at the same time. To obtain a good Ehrlich film fixation by heat is almost an essential, a method which is not easy in private practice, even with improvised methods.

APPENDICITIS.

In this, which is one of the commonest surgical maladies to which man is heir, there is still room for elucidation and progress.

As in acute local suppurations elsewhere, there are generally very definite alterations in the quality of the blood. The hæmoglobin undergoes diminution and the erythrocytes decrease in number according to virulence and protracted existence of the toxæmia induced by the suppurative focus; but by far the most striking feature in the hæmatological chart of appendicitis is the peculiar leucocytic reaction. This reaction depends upon a variety of conditions which shall be dealt with in so far as we are in a position to interpret them, after the records have been given. Red corpuscles and hæmoglobin value are so frequently below par, even in healthy persons, that we are generally unable to put any interpretation upon their condition during such a disease as appendicitis. The leucocytes, however, if estimated and charted at regular intervals, can in the great majority of cases be of signal assistance to the clinician, not only in diagnosis, but also in determining the exact progress of the inflammatory phenomena after operation. The post-operative course of suppurative appendicitis is by no means free from complication or danger, and I think that it would be a step in the right direction if regular blood examinations were made after all such operations.

Very frequently there is not the slightest difficulty in making a diagnosis in suppurative appendicitis. The pulse, temperature, and local conditions all suggest the presence of pus, but there are cases of deeply seated suppuration, retro-cæcal or pelvic, in which the local manifestations of pus are absent, and in which the temperature and pulse may be misleading. We have all met with such conditions and it is in such that the surgeon is apt to delay his otherwise prompt operative measures. Under such conditions, maintained or increasing leucocytosis generally exists, which, if determined, would probably guide him to a correct conclusion concerning the case.

The method of waiting until an abscess points, or until a non-adherent abscess becomes adherent before deciding to operate, involves more danger owing to possible extension with general peritonitis, than prompt evacuation of the pus even though the general peritoneal cavity is opened in doing so. A deeply seated abscess can be safely drained if the general peritoneal cavity is shut off by careful packing. So that once an abscess is diagnosed the best chance is given to the patient by its prompt evacuation, even though the general peritoneal cavity is opened. I dwell upon this point merely because I feel that making a diagnosis of suppuration is equivalent to a prompt call for operation. This makes a very sharp distinction between the lines followed in suppurative and catarrhal appendicitis respectively.

Localised suppurations around the appendix may recover spontaneously without operation. This may be due to a variety of causes, such as evacuation into the adjoining viscera, or externally, or by the organisms losing their vitality and the gradual absorption of the pus by phagocytic action and lymphatic absorption. This fact no doubt accounts for some of those rare cases of appendicitis which, whilst exhibiting a definite leucocytosis suggestive of suppuration, have got perfectly well without operation. Such terminations are rare, however, and the risk of trusting to such is very considerable and wholly unjustifiable.

Before passing to my actual results in this disease, I would like to say one or two words concerning the charts. They are an approximate representation of the written record. The pulse, temperature, and leucocyte numeral are placed side by side, the normal of each being indicated by a horizontal line in order that the existing curve can be appreciated at a glance. The vertical lines indicate incidents of interest during the time of observation.

I propose to arrange my cases as follows: I.—Appendicitis with Local Suppuration; II.—Appendicitis with General Peritonitis; III.—Catarrhal Appendicitis.

I. APPENDICITIS WITH LOCALISED SUPPURATION.

1.—H. J. R., æt. 23, male. Local signs of abscess entirely absent.

	Temp.	Pulse.	Resp.	Leucocytes.
May 7th, 1900	98	80	24	8000
8th	99	72	20	10560
9th	98	60	24	13840
11th	98	80	22	13200
12th	98	72	20	15600

14th, Operation. One ounce of pus found well shut off by adhesions. Anæsthetic—Nitrous oxide and ether.

	Temp.	Pulse.	Resp.	Leucocytes.
15th	100	64	22	17600
16th	98	72	20	16240
18th	98·6	72	24	10640
19th	98·6	—	—	14160

	Temp.	Pulse.	Resp.	Leucocytes.
May 21st	98·6	—	—	10240
22nd	98·6	—	—	9460
24th	98·6	—	—	9360
28th	98·6	—	—	5600
June 1st	98·6	—	—	8880
5th	98·6	—	—	6800

Dressed daily; wound entirely healed on June 6th. It is very probable that this case was admitted before a local suppuration was established. I infer this from the initial count which gradually rose despite his rest and low diet. It is also probable that his leucocytosis at the time of operation was higher than that existing on May 12th. The interesting features are the entire absence of local signs of suppuration together with a normal temperature and pulse rate.

2.—M. B., æt. 22, female.

	Temp.	Pulse.	Resp.	Leucocytes.
May 17th, 1900	102	120	32	9840
19th	97	80	24	7920
21st	98·6	70	24	12160

Operation performed after the last count; half a drachm of pus was found in the region of the appendix well shut off. Anæsthetic—Ethyl chloride, ether.

	Temp.	Pulse.	Resp.	Leucocytes.
22nd	98·6	69	22	12800
24th	98·6	66	22	10000
26th	98·6	—	—	6800
31st	98·6	—	—	6960
June 7th	98·6	—	—	6560

Little or no discharge after the operation.

This case was regarded as a catarrhal condition. It is the lowest leucocyte count I ever found in suppurative appendicitis, except case 23. The amount of pus was very small and well shut off. The high temperature and rapid pulse on admission was probably due to her journey to hospital. The recovery was uninterrupted.

3.—M. H., æt. 35, male. Illness commenced on June 1st; marked local signs of inflammation; patient looks very ill.

	Temp.	Pulse	Resp.	Leucocytes.
June 3rd, 1900	98·6	96	24	17760

Operation same evening revealed a sloughing appendix with a few drachms of pus free in the general peritoneal cavity Anæsthetic—Ether.

June 4th	98.8	88	24	10000
5th	97	90	26	7760
7th	98·6	80	20	10000
10th	99	—	—	8720
13th	99	—	—	8080

Wound healed on June 13th. Dressed daily. The prognosis in this case seemed very doubtful on June 3rd, and it is worth noticing that the leucocytosis was very definite on that day. His post-operative progress was most satisfactory.

4.—P. G., æt. 5, male. Obscure symptoms; pain, tenderness and distension in the epigastric region; no lump to be felt anywhere; no vomiting; regarded as a probable typhoid condition.

	Temp.	Pulse.	Resp.	Leucocytes.
June 4th, 1900	101	106	40	17760

Widal's reaction on this day proved negative.

5th	101	118	40	19680

6th Abdomen opened; abscess containing several ounces of pus found behind the cæcum. Anæsthetic—Chloroform.

7th	102·5	140	48	41200

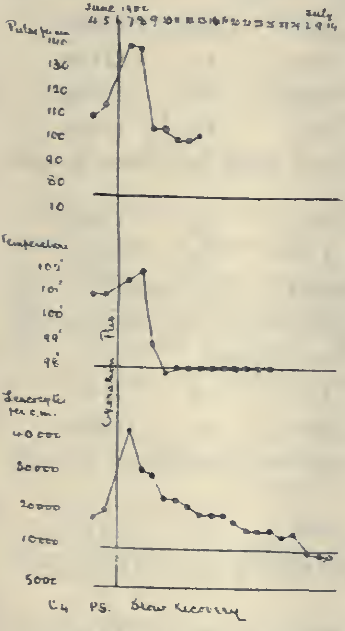
Dressed; drainage tube and packing removed, behind which a large amount of pus was pent up.

8th	102·5	136	40	32320
9th	99	108	32	31520
10th	97·5	108	32	24160
11th	98·6	96	36	24480
12th	98·6	96	34	22160
13th	98·6	104	40	19680
16th	98·6	—	—	19280

	Temp.	Pulse.	Resp.	Leucocytosis.
June 18th	98·6	—	—	19680
20th	98·6	—	—	14480
21st	98·6	—	—	13840
23rd	98·6	—	—	13520
25th	98·6	—	—	16650
27th	98·6	—	—	12960
29th	98·6	—	—	14080
July 2nd	98·6	—	—	8080
9th	98·6	—	—	10880
14th	98·6	—	—	8080

Wound dressed daily; discharged until July 8th.

The attached chart will present at a glance the characteristic leucocyte curve. A Widal's reaction when negative cannot exclude typhoid until the patient has been ill five days at the least, and when positive it does not exclude appendicitis, because the patient may have had typhoid a short time prior to the existing attack. In this class of case the leucocyte curve is of great value. It gives information within a day or two of the onset of the disease, and whether the patient has had typhoid or not. His high leucocytosis on the day following operation is probably due to an increased absorption of positively chemiotactic toxin by the freshened abscess wall; to a less extent to loss of blood and the influence of the anæsthetic. The most remarkable feature about this case is the very slow post-operative progress, his leucocyte numeral falling



gradually, due no doubt to the very great difficulty experienced in draining such a deep abscess cavity.

5.—F. D., æt. 19, male. Well marked local conditions present.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 30th, 1900	101·8	96	36	13680
July 1st,	100·4	92	36	15400

Operation, after count made. Three or four ounces of fœtid pus evacuated. Anæsthetic—Ether.

July 3rd	98	80	20	13600
4th	96·2	88	22	15120
5th	100 2	116	28	26240

A large amount of pus was pent up behind the packing on this day.

6th	99	100	28	19840
7th	99	100	24	11120
9th	99·5	108	28	22120
11th	99·6	104	28	22120

A large amount of discharge and much brawniness around wound.

13th	99·4	108	32	16240
15th	99·8	128	32	22320

July 16. Abdomen again opened; a large quantity of pus was evacuated from region of appendix and pelvis; free drainage was established. Anæsthetic—Gas and ether.

17th	98	108	24	17920
19th	101·4	148	32	25280

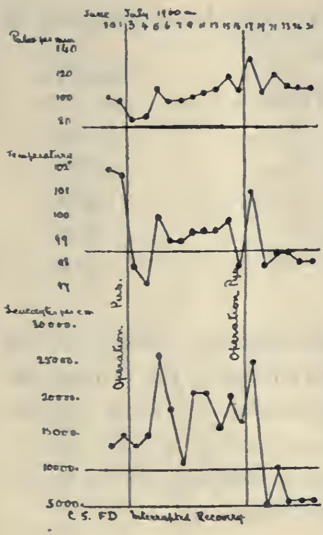
A large quantity of pus was evacuated from behind the tube on this date.

21st	98	100	24	5120

To day the patient looks quite a different man, so great is the general improvement.

23rd	99	120	24	10240 (after tea)
26th	98·6	104	24	7520
31st	98·6	—	—	8400

Healed.



The temperature, pulse, and leucocyte count rival each other very closely in the accurate manner with which they reflect the condition of the patient on any particular day. His general condition until about July 21st gave rise to the utmost anxiety. The leucocyte curve was extremely fitful, the ebb and flow being due no doubt to the varying amounts of discharge and its degree of retention. On July 21st the leucocyte numeral reached normal for the first time from which date his recovery was assured.

6.—E. W., æt. 17, female. Regarded as catarrhal appendicitis.

	Temp.	Leucocytes per c.m.
July 3rd	98	9520
5th	98·6	12800

Not followed further. Operation, on July 11th, revealed a small abscess in the region of the appendix. This case is of little interest, because of my few observations upon it. As I have selected none of my cases, this one, which is one of the least instructive is added. It is probable that her leucocyte numeral after July 5th continued to increase.

7.—A. L., æt. 21, male. Local signs of suppuration present.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 11th, 1900	100·5	84	—	12800
12th	101·2	84	—	12640

Differential count on July 12th was as follows:—

	Per cent.
Polynuclear finely granular oxyphiles -	81·9
Small lymphocytes - - - - -	8
Large lymphocytes - - - -	8
Transitional cells - - - - -	2·1

Operation after count revealed a small abscess well shut off by adhesions. Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 13th	100	—	—	17440
14th	N.	—	—	9680
16th	N.	—	—	9820
19th	N.	—	—	8730
23rd	N.	—	—	7760

Healed on July 23rd.

This case illustrates the stagnant leucocyte count of a small abscess well walled off by adhesions and giving rise to very little toxin absorption. Although the quantitative count in this case was only a little over 12000 per c.m., the fact of there being a moderate increase of polynuclear cells associated with it tended to confirm the opinion that pus was present.

8.—G. C., æt. 14, male. No local signs of suppuration; regarded by the surgeon as a catarrhal condition.

	Temp	Pulse.	Resp.	Leucocytes per c.m.
Aug. 1st, 1900	100	88	28	21840

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	94
Lymphocytes - - - - -	4
Transitional cells - - - -	1·6
Polynuclear coarsely granular oxyphiles	·4

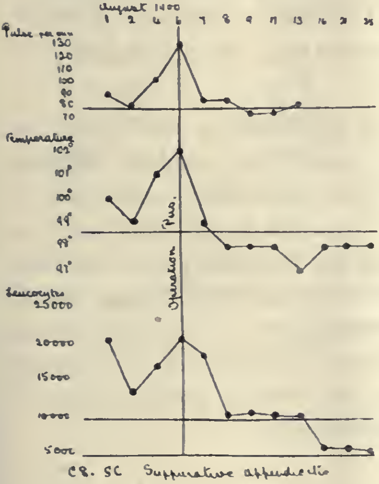
	Temp	Pulse.	Resp.	Leucocytes per c.m.
Aug. 2nd	99	80	24	13120
4th	101	100	24	17600
6th	102	130	30	21040

Operation on this day revealed an abscess behind the colon containing several ounces of pus. Anæsthetic—Ether.

	Temp	Pulse.	Resp.	Leucocytes per c.m.
Aug. 7th	99	86	24	20560
8th	98	84	25	11840
9th	98	72	22	12480
11th	98	70	24	10240

	Temp.	Pulse.	Resp.	Leucocytes Per cent.
Aug. 13th	97	80	22	10240
16th	98·6	—	—	6800
21st	98·6	—	—	6560
25th	98·6	—	—	5600

Healed on August 25th.



His leucocytosis on admission was, to some extent, due to the disturbance of his journey. It fell on the second day to its true inflammatory value, from which point it gradually increased, and it was this real increase which induced the surgeon to interfere in spite of the entire absence of local suppuration. It is of interest to observe how closely the temperature-pulse and leucocyte curves follow each other in this case. Although the abscess was very deep in the abdominal cavity it drained well.

9.—W. B., æt. 10, male. Tender swelling in region of appendix.

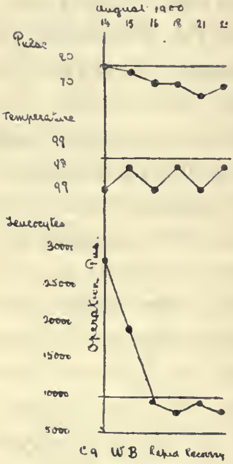
	Temp.	Pulse.	Resp.	Leucocytes.
Aug. 14th, 1900	97	78	21	28720

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles -	94
Small lymphocytes - - - -	4·2
Large lymphocytes - - - -	1
Polynuclear coarsely granulated oxyphiles	·6
Transitional cells - - - -	·2

Operation, performed same evening, revealed an abscess containing several ounces of pus, which aërobically gave a pure growth of bacillus. coli. Anæsthetic—Gas, ether, A.C.E. mixture.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 15th	98	76	29	19360
16th	97	72	28	9680
18th	98	72	20	8080
21st	97	60	18	9360
25th	98	72	20	8720



Drained well; excellent recovery.

The accompanying chart brings out very forcibly the marked difference between temperature and pulse on the one hand and the leucocyte count on the other; the heat value and pulse rate were normal, despite the existence of a large abscess. His after progress was most satisfactory, the wound having healed by August 25th.

10.—N. P., æt. 10, female. Local signs of suppuration present.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 26th	101·2	116	26	15120

Operation same evening; several ounces of pus evacuated; well shut off by adhesions.

29th	99	110	32	12160
30th	N.	88	24	13680
Sept. 1st	N.	—	—	5920

This case, though discharging pus freely for a few days after operation, had an uninterrupted recovery, and was discharged on September 15th.

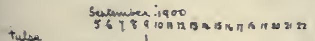
11.—G. W., æt. 16, male. Localised pain in region of appendix; 3rd day of illness admitted to a medical ward.

	Temp.	Pulse.	Resp.	Leucocytes.
Sept. 5th	99·6	84	24	11840
6th	100	84	20	15600
7th	100	80	24	17760
8th	101	96	24	23120
9th	98·6	80	24	23440

Operation on this day revealed an abscess containing several ounces of fœtid pus, with a loose sloughed off appendix.

10th	98·6	—	—	24960
11th	98·6	—	—	15920
12th	98·6	—	—	11200
14th	98·6	—	—	11520
17th	98·6	—	—	9040
22nd	98·6	—	—	8400

Recovery without interruption. This case is of special interest. On admission there certainly were no local signs of suppuration, and it was confidently regarded by the physician in charge as a case of catarrhal appendicitis. Later, a surgeon was asked to look at the case, and he, taking all the evidence in favour of suppuration into consideration, decided to operate. A better example of what is called advancing leucocytosis could not exist; it is of interest to compare it with the pulse and temperature. The after-treatment was uneventful, and the patient left hospital a few days after my last count was taken.



12.—G. C., æt. 21, male. The only local sign is slight tenderness over the appendix. 6th day of disease.

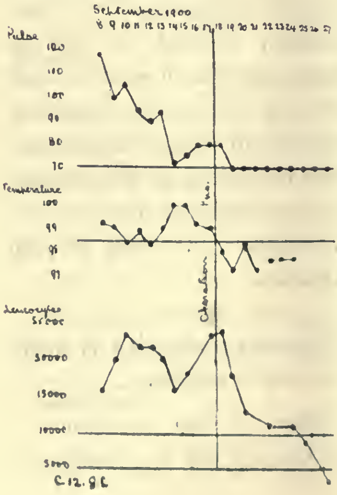
	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 8th, 1900	99·4	116	24	16960

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 9th	99	100	24	20400
10th	98·6	104	24	23920
11th	99·4	88	22	21680
12th	98·6	84	20	21200
13th	99·4	88	20	19260
14th	100	68	22	16800
15th	100	76	24	18720
17th	99·6	84	28	23120

Operation, performed after the last count was taken, revealed a large abscess containing five or six ounces of pus, situated behind the cæcum, reaching as high as the right kidney. Aërobic cultures gave a pure growth of bacillus coli. Anæsthetic —Gas and ether.

18th	99·4	84	20	24000
19th	98·4	72	20	18400
20th	97·4	72	18	13120
21st	98.4	72	20	10880
22nd	97·6	78	24	12800
24th	98	72	20	12460
25th	98	72	20	9840
27th	98	72	20	4640

Discharged well.



This case was one of great difficulty. The surgeon, a man of great authority upon this subject, could not satisfy himself that pus was present. The pulse rate and temperature afford very little assistance. The abscess was deeply seated, giving rise to no local signs beyond slight local tenderness. The leucocyte curve is very definite, well nigh stagnant, explained probably by the fact that the abscess was well walled off by adhesions. His post-operative progress was very satisfactory, taking into consideration the depth of the abscess, and the difficulty often experienced in obtaining free drainage.

13.—H. Y., æt. 21, male. Local signs of suppuration present

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 18th, 1900	99·2	96	24	13600
Operation, same evening, revealed an adherent abscess containing one ounce of pus; appendix sloughed off. Anæsthetic—Chloroform.				
Sept. 19th	100·4	68	28	20860
20th	98·6	68	28	13440
21st	98·6	80	32	7120
22nd	99·4	84	24	13360
Pent-up discharge.				
23rd	100·4	80	24	7120
24th	100·2	68	20	11520
Pent-up discharge in superficial pockets of wound.				
26th	99	—	—	15600
28th	98·6	—	—	11200
Oct. 1st	98·6	—	—	12160
5th	98·6	—	—	11840
15th	98·6	—	—	3120

The interest of this case lies in his after-treatment. He drained well for a few days, and his leucocyte count touched normal on the third day after operation, a condition that has occurred in nearly all my cases of loose gangrenous appendices. After this point, however, we meet with a series of rises and falls in the leucocyte curve. On two occasions pent-up discharge was sufficient to account for the slight leucocytosis. After September 24th, I could discover no evident cause for such unusually high counts, and began to suspect a fresh pyogenic accumulation. On October 8th, a plug of iodoform gauze was fished up from the bottom of the wound. This gauze, which had been forgotten owing to a change of house surgeons, must have been in the wound at least two weeks, and is a sufficient reason to explain the fluctuating leucocyte curve.

14.—H. M., æt. 24, male. Well-marked local signs of suppuration.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 21st, 1900	101·8	100	28	23120

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	88·4
Small lymphocytes - - - -	7·2
Large lymphocytes - - - -	3·6
Polynuclear coarsely granular oxyphiles	·8

Operation performed on the same evening revealed a large abscess containing eight or nine ounces of fœtid pus from which a pure aërobic growth of bacillus coli was obtained. Anæsthetic —Ether.

Sept. 22nd	99·6	96	26	20560
23rd	98	72	24	12800
24th	98	72	22	14800
25th	98	70	22	16960
26th	98	72	22	16800
27th	98	70	22	16800
29th	98	68	22	21040

30th. As the cavity was draining so badly, the surgeon reinserted a drainage tube, the first tube having been dispensed with on Sept. 24th.

Oct. 1st	98·6	—	—	16240
3rd	98	—	—	17120
5th	98	—	—	7440
9th	98	—	—	7440

Discharged healed and well a day or two after the last count was taken This case did not drain freely. The pulse and temperature remained normal from Sept. 23rd, in contrast to the leucocyte numeral, which kept high, due no doubt to the imperfect drainge.

15.—M. L., æt. 17, male. Localised tenderness; small lump to be felt.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 29th	101·2	128	38	19040

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	93 6
Small lymphocytes	3·8
Large lymphocytes	2
Transitional cells	·6

Operation same day revealed a localised abscess containing about one ounce of fœtid pus, which on aërobic cultivation gave a pure growth of bacillus coli. Anæsthetic—Ether.

Sept. 30th	101·2	120	32	14320
Oct. 1st	100·6	116	28	8080
3rd	99	76	24	10000
15th	98·6	76	24	10480
19th	100	—	—	7760

Healed on October 19th. This patient made a very excellent recovery.

16.—L. P., æt. 24, male. Slight pain in right iliac fossa; no tenderness; no tumour to be palpated

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 18th	99	101	28	24000

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	84·8
Small lymphocytes	7·8
Large lymphocytes	4·6
Transitional cells	2·4
Polynuclear coarsely granular oxyphiles	·4

Operation on the same evening revealed an abscess containing one ounce of pus, from which by aërobic cultivation a pure growth of bacillus coli was obtained.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 19th	100·4	116	24	23120
20th	100	96	24	21140
21st	101	108	36	11520
22nd	99·2	96	24	20560

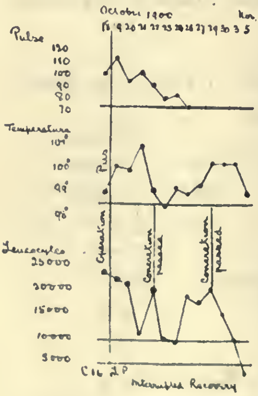
Upon this day a large fæcal concretion was passed through the wound.

23rd	98·4	84	20	10560
24th	99·2	88	20	9040
26th	99	80	20	18080
27th	99·4	—	—	16800
29th	100·4	—	—	20560

Another large fæcal concretion was passed through the wound.

30th	100·4	—	—	14240
Nov. 3rd	100·4	—	—	10880
5th	99	—	—	4640

This case was generally regarded as one of catarrhal appendicitis. It is of interest to observe the temperature pulse and leucocyte estimate in this case. A very definite leucocytosis, associated with a rapid pulse, is strong evidence against a simple catarrhal appendicitis. The special feature of this case however is the post-operative progress, so clearly portrayed in the accompanying chart. It suggests imperfect drainage, but I think that the chief factor in explaining the fluctuating curves was the passage of two fæcal concretions which had in all probability been lying in the bottom of the wound for some time. Such concretions must form a fruitful nidus for pyogenic organisms, and their consequent toxins. After the second concretion was passed his career was uneventful, and the temperature did not rise



above normal after Nov. 5th. He was discharged healed and well within a few days of the last count.

17.—W. G., æt. 12, male. Pain and tenderness in region of appendix; slight resistance; no definite tumour.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 19th, 1900	101	96	20	13280

Differential count was as follows :—

	Per cent.
Polynuclear finely granular oxyphiles	80·6
Small lymphocytes	14
Large lymphocytes	4
Mast cells	·6
Transitional cells	·4
Polynuclear coarsely granular oxyphiles	·4

Oct. 20th	99	100	20	12160
21st	98	90	26	17440

Operation, performed after count, revealed a localised abscess. Anæsthetic—A.C.E. mixture.

23rd	101	116	32	16800
24th	98	108	28	16240
26th	97	96	28	7120
31st	101	112	22	24000
Nov. 1st	100	120	22	20000

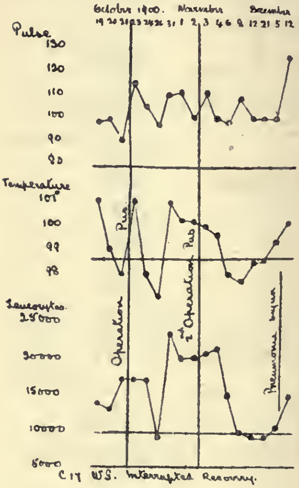
2nd Abdomen again opened; a large abscess was found behind the hepatic flexure, and drained through the right loin. Anæsthetic—Ether.

3rd	100·2	100	28	20560
4th	99·6	120	32	22800
6th	98	100	26	14640
8th	97·6	98	22	10880
12th	98·4	112	22	8080
21st	98·8	100	24	8400

At this stage the wound was practically healed over, and the boy was running about the wards.

Dec. 5th	99·4	100	28	11640
12th	100·4	120	32	16240

Between the date of December 4th and that of December 12th, the boy passed through an attack of acute lobar pneumonia with daily temperatures of 104°. This case was one of exceptional interest, and I regret very much that I was unable to record his leucocyte value from day to day. After the first operation he seemed to make good progress, as shown by the temperature and leucocytes, which touched their normal value on the third day. For five days I did not examine the patient, then I discovered a very definite leucocytosis. This, of course, suggested a fresh abscess or bad drainage, and this was strengthened by the appearance of pain in the right hypochondriac region. The surgeon performed laparotomy again, and discovered a large abscess behind the hepatic flexure of the colon. This abscess drained well. A day or two previous to his intended discharge from hospital, he was again laid up, this time with pneumonia. He commenced to complain on December 4th; his crisis was on December 10th. The leucocyte count taken on December 5th indicates a degree upon the upward rise of the pneumonic wave, and that taken on December 12th was no doubt part of the resolution fall.



The little fellow to everyone's delight pulled through all his troubles, and made a good recovery. The accompanying chart will give a very accurate reflection of the chequered character of this instructive case.

18.—W. H., æt. 16, male. Well-marked local signs of suppuration.

	Temp.	Pulse.	Resp.	Leucocytes.
Oct. 19th, 1900	102	110	20	16080

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles	95
Small lymphocytes - - - -	1·8
Large lymphocytes - - - -	1·8
Transitional cells - - - -	·6
Polynuclear coarsely granular oxyphiles	·6
Mast cells - - - - -	·2

	Temp.	Pulse.	Resp.	Leucocytes.
Oct. 20th	101	88	28	14000

21st Operation revealed a localised abscess with a loose gangrenous appendix. Anæsthetic—Gas and ether.

	Temp.	Pulse.	Resp.	Leucocytes.
22nd	100	100	20	18400
23rd	101	104	24	14960
24th	100	120	28	19680
26th	99	120	28	12800
29th	98·4	84	22	4800
31st	98·4	80	22	4800

Excellent recovery ; small granulating wound on October 31st. This case discharged very freely for several days after the operation, which I think was sufficient to account for his somewhat fitful leucocyte curve.

19 —C. P., æt. 16, male. Abscess with definite fluctuation.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 19th, 1900	101·6	88	24	16240

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles -	90·8
Small lymphocytes - - - -	3·6
Large lymphocytes - - - -	1·6
Polynuclear coarsely granular oxyphiles -	2·2
Transitional cells - - - -	1
Mast cells - - - - - -	·8

Oct. 20th Operation performed ; abscess containing several ounces of pus with a loose gangrenous appendix evacuated. Anæsthetic—Chloroform.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 20th	100·6	96	32	18720
21st	98·6	68	24	16240
22nd	98	64	20	12240
23rd	97·2	60	20	6240
25th	98	60	16	9360

This case, which gave no difficulty in diagnosis or treatment, in so much that the abscess was superficial, and that nature had performed an excellent appendectomy, presents a very unusual number of eosinophiles.

20.—E. B., æt. 20, male.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Nov. 4th, 1900	4	—	—	29680

Differential count as follows:—

	Per cent.
Poly nuclear finely granular oxyphiles	89
Small lymphocytes	4·4
Large lymphocytes	4.2
Transitional cells	1
Polynuclear coarsely granular oxyphiles	1
Mast cells	·4

Operation performed, after count was taken, and revealed an abscess containing several ounces of fœtid pus, from which a pure aërobic growth of bacillus coli was obtained.

No further counts were taken from this case. It made a good recovery.

21.—J. T., æt. 66, male. Tender lump in right iliac fossa; has been in hospital several days.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 13th, 1900	98	72	18	12960

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	74·8
Small lymphocytes	14·4
Large lymphocytes	6·8
Transitional cells	2·4
Polynuclear coarsely granular oxyphiles	1·2
Mast cells	·4

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 16th	98	70	20	9360
17th	98	66	22	5760

Operation revealed a mass of adhesions with a little granulation tissue in the middle, which on aërobic cultivation gave a copious growth of bacterum coli, with a few colonies of staphylococcus pyogenes albus. No actual pus was visible.

Oct. 18th	99	88	22	10880
19th	98	80	22	14160
20th	99	70	20	10240
22nd	101	88	24	12480
24th	98·2	76	20	7440
26th	98·2	—	—	10560
31st	98·4	—	—	7440

The wound suppurated and the old man's recuperative power was comparatively speaking low. The slight leucocytoses on October 13th gave a normal differential count In the light of facts revealed at the operation, I think one might reasonably conclude that this leucocytosis was of an inflammatory nature, due to the smouldering embers of an old pyogenic focus which was gradually being extinguished. The patient recovered and was discharged well.

22.—M. H., æt. 16, female. The only local symptom was pain in the abdomen; there was no tenderness or swelling to be elicited by palpation. Admitted to a medical ward.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Dec. 13th	101·8	120	44	16240
14th	101·6	140	32	23360
15th	102·2	152	36	21840
16th	101·4	125	36	22500
17th	101	125	36	23120

The patient at this stage began to have slight tenderness in the right iliac fossa. A surgeon was asked to see the case, but he did not think that suppuration had been established.

18th	100	128	28	27040
19th	99	120	28	25000

Differential count upon this day as follows :—

	Per cent.
Polynuclear finely granular oxyphiles	89
Small lymphocytes - - - -	6·2
Large lymphocytes - - - -	3·8
Transitional cells - - - -	1

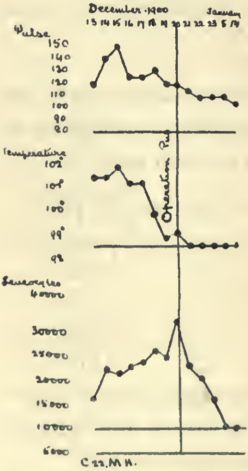
	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Dec. 20th	99	118	—	33120

Operation upon this day revealed a large abscess containing several ounces of fœtid pus, situated behind the cæcum. Anæsthetic—A.C.E. mixture.

21st	99·2	116	—	24680
22nd	98·6	115	—	23120
23rd	98·6	118	—	19000
Jan. 5th, 1901	98·6	112	—	12460

On January 12th the drainage tube which had been left out several days was reinserted since the wound continued to discharge freely.

Jan. 14th	98·6	107	24	12480



On Jan. 18th a fæcal concretion was passed through the wound. As no further count was made after Jan. 14th there is no means of knowing when her leucocyte numeral touched the normal line. The patient left hospital on Jan. 27th with still a little discharge from the wound.

This case is one of unusual interest, as the accompanying chart fully bears out. Local signs of suppuration were absent, the patient was admitted to a medical ward, yet when seen by a surgeon, five days after admission, it was regarded as one of catarrhal appendicitis. The temperature and pulse were more suggestive of suppuration on admission than just prior to operation. The leucocyte count on the other hand advanced steadily until the day of operation. That delay in arriving at a diagnosis under conditions like these is highly dangerous there can be no doubt. A patient with such a large abscess is living on the edge of a precipice, a general peritonitis might occur at any moment owing to a rupture or leak in the abscess wall.

The post-operative progress, though satisfactory for a few days, became complicated later by fæcal concretions. My leucocyte record in this part of her hospital life was not very regular, and I have little doubt that it would have been of a fluctuating and fitful character, due in all probability to a fæcal concretion at the bottom of the sinus, which maintained suppuration and prevented healing of the wound.

23.—H. W., æt. 41, male. Has been ill in bed eight weeks. A large tender mass is to be felt in the right iliac fossa, in which distinct fluctuation can be felt.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 29th, 1900	100	80	20	9360

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles -	61·2
Small lymphocytes - - - -	35
Large lymphocytes - - - -	2·8
Transitional cells - - - -	·8
Polynuclear coarsely granular oxyphiles -	·2

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 30th	98·6	76	20	7440

July 1st Operation revealed an abscess containing several ounces of pus, surrounded by dense adhesions. Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
2nd	98·6	—	—	6400
4th	98·6	—	—	6960
10th	98·6	—	—	5600

This is the one exception to my otherwise positive record of constant leucocytosis in suppurative appendicitis. The leucocyte counts upon the two days preceding operation were normal, and even after operation there is no elevation as is so frequently the case. This operation practically consisted in making an incision through the skin and putting a drainage tube into the large abscess cavity, which was quite superficial. The anæsthetic was ether. The pus was not examined bacteriologically much to my regret, being unable to attend the operation in person, I had to depend upon the house surgeon, who unfortunately forgot to save me a specimen. It is to some extent a matter of speculation to attempt to explain this one anomalous case. There was a very chronic history, pain and tenderness for eight weeks, so that his abscess was by no means of recent formation. The dense fibrous walls formed a very effective barrier to the absorption of toxins. There is of course a remote possibility that this was a tuberculous condition, and had I been present at the operation I could have satisfied myself as to whether septic organisms were present or not. It is also possible that the organisms in this abscess, which though active in the early part of its existence, had lost their vitality, and so gave off little or no toxin at the time of my leucocyte examinations. The differential count of this case brings out a well marked increase in the small lymhpocytes, a condition which is very unusual in any suppuration, except a tubercular one.

II. APPENDICITIS WITH GENERAL PERITONITIS.

24.—J. L., æt. 15, male. Ill five days; abdomen distended and immobile; considerable collapse.

	Temp.	Pulse.	Resp.	Leucocytes.
Aug. 29th, 1900	99·6	120	36	29560

Operation; incision made into right flank, and tube inserted. Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes.
Aug. 30th	103	128	28	28880

Died on August 31st.

Autopsy revealed a perforated appendix, general suppurative peritonitis with large amounts of pus in the pelvis and left loin.

This patient was far spent on admission to hospital. That he was making a vigorous fight against the violent toxæmia is shown by his well marked leucocytosis.

It occurred to me that, given a bad case of general peritonitis with considerable leucocytic reaction, it might be a strong indication to adopt a more perfect method of drainage than was adopted in this case. It is reasonable, I think, to suppose that in such a patient, given flushing or sponging together with free drainage in both flanks and middle line in order to remove as much toxic product as possible, we would give him a better chance of bringing his plucky fight against such a violent onslaught to a successful issue. Past experience has taught us that, in severe general peritonitis giving a normal or subnormal leucocyte count, the prognosis is of the worst. The dose of toxin is practically a lethal one from the outset, and death generally supervenes within two or three days. In such a case we cannot help realising that whatever is done the result is a foregone conclusion; whilst in cases giving a more vigorous reaction and a well marked leucocytosis, there is I think much more encouragement for making the operative measures as thorough as the patient will possibly stand. The fact that this patient lived so long after his operation, which could not be of much value to him, is in keeping with his vigorous reaction.

25—A. W., æt. 13, male. Severe general peritonitis; considerable collapse.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 31st, 1900	98·6	98	32	24000

Operation; abdomen opened in middle line and right flank; intestines sponged; glass drainage tube inserted into pelvis. Anæsthetic—Chloroform.

Sept. 1st	100·4	122	26	27760
2nd	98 6	128	28	31840
3rd	99·8	128	20	39040
4th	100	130	28	44800
5th	101·6	132	32	28400

Died on Sept. 5th, two hours after my last count.

Autopsy revealed a swollen inflamed appendix; general suppurative appendicitis with about half-a-pint of pus in left loin.

This case was very ill, the collapse was not so profound as in case 24.

The treatment in this case was more vigorous, and although ultimately fatal, the progress was distinctly more encouraging.

In view of the steadily increasing count after operation, suggestive of further mischief, and the fact that the boy's general condition was good, I ventured to suggest a further operation in the left flank.

It is to be observed that the last leucocyte estimation made just before death is much lower than on the previous day; this is in all probability due to a rapidly falling vitality. I have not during my investigations met with any increased leucocytosis during the moribund state preceding death where any degree of leucocytosis has previously existed.

26.—X. W., æt. 21, male. Severe general peritonitis; marked collapse.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 11th, 1900	100·2	142	36	24300

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	96
Small lymphocytes	2·8
Large lymphocytes	·6
Transitional cells	·4
Polynuclear coarsely granular oxyphiles	·2

Operation; abdomen opened, flushed out, and drained in the middle line. Cultivations from general peritoneum gave a pure aërobic growth of bacterium coli. Anæsthetic—Chloroform, A.C.E. mixture.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 12th	100·4	168	44	25040

Died on October 13th.

Autopsy revealed an acute suppurative peritonitis due to appendicitis with perforation.

III. CATARRHAL APPENDICITIS.

27.—R. A., æt. 43, male. Acute attack; pain; tender lump.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 12th	98	64	22	8560

13th Operation; appendix excised; adhesions; no pus present. Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
14th	97·5	72	20	8880
15th	98	72	20	9840
16th	98·6	64	22	9840
18th	98·6	—	—	10240
19th	98·6	—	—	10240
20th	98·6	—	—	7120
22nd	98·6	—	—	7160

Healed by primary union.

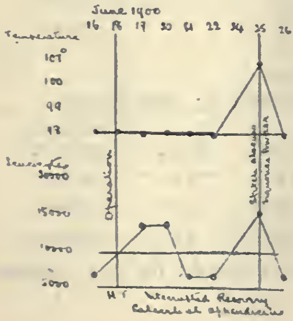
28.—H. T., æt. 11, male. Acute attack.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 16th	98	—	—	6640

18th Operation; appendix excised; no pus. Anæsthetic—Chloroform.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
19th	98·6	—	—	13120
20th	98·6	—	—	13680
21st	98·6	—	—	6240
22nd	98·6	—	—	7600
25th	101	—	—	15520
26th	98·6	—	—	7200
28th	98·6	—	—	10000

Apart from the absence of any leucocytosis prior to operation, this case presents features of some interest. Chloroform was the anæsthetic, and we notice a distinct increase in the leucocytes for two days after operation. Then on June 25th the temperature and leucocyte curves take a sudden rise; this was due, firstly, to a dose of liquorice powder given on June 24th, which produced a smart purge; secondly and chiefly to a small stitch abscess which was



noticed on June 25th. After prompt treatment the leucocyte curve fell to normal.

29.—W. W., æt. 54, male. Second attack; ill nine days; tender swelling in right iliac fossa. Regarded by the surgeon as a localised abscess.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 1st	98	72	24	8880
,, 4th	98	76	24	10400

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles -	79·2
Small lymphocytes - - - -	14
Large lymphocytes - - - -	4
Polynuclear coarsely granular oxyphiles -	1·4
Transitional cells - - - - -	1·4

The patient steadfastly refused to have any operation done. An ice bag was put over his tender lump, which disappeared entirely in a few days. The differential count is approximately that of healthy blood.

30.—J. F., æt. 40, male. Acute attack.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 26th, 1900	100	76	22	10000

Operation; appendix excised; no suppuration. Anæsthetic —Ether and chloroform.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
28th	99	72	24	15280
29th	99	70	22	9360
30th	98	70	22	10080
31st	99	—	—	10560
Sept 1st	98·6	—	—	6560
2nd	98·6	—	—	5920

Healed by primary union.

31.—W. K., æt. 25, male. Acute attack; fifth relapse.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 12th	99·8	72	22	9360
13th	98·6	72	22	10880
15th	98·4	68	22	6560

17th Operation; appendix excised; no pus present. Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 18th	98·6	72	26	10660
19th	98·6	72	24	8720
20th	98·6	68	20	7760
22nd	99	60	20	9360

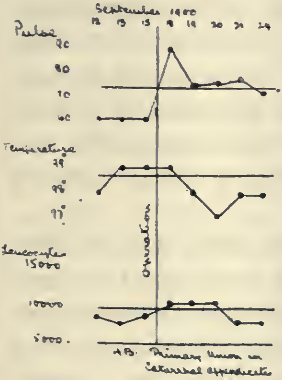
Healed by primary union.

32.—H. B., æt. 48, male. Acute attack, with marked local tenderness and rigidity.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 12th	98	68	22	9520
13th	99	64	18	7120
15th	99	64	20	9520

17th Operation; appendix stenosed, cultivations from the interior of which gave a pure aërobic growth of bacterium coli. Anæsthetic—Gas, ether.

18th	99	90	24	11560
19th	98	76	18	11520
20th	97	76	20	11600
21st	98	80	20	8560
24th	98	72	20	8720



The wound healed by primary union.

There was considerable doubt clinically whether this case was a suppurative one or not, owing to the intensity of his local signs. The accompanying chart is fairly typical of the leucocytic condition met with in catarrhal appendicitis.

33.—P. C., æt. 29, female. Diagnosed as appendicitis; fourth attack; pain, tenderness, and a swelling in right iliac fossa.

	Temp.	Pulse.	Resp.	Leucocytes.
Oct. 12th	98	—	—	10040
13th	97	—	—	9680

15th Operation revealed a small ovarian tumour with pedicle, which had become somewhat twisted and caused the so-called attacks of appendicitis. Tumour removed. Anæsthetic—Gas, ether.

16th	98·6	—	—	16240
17th	99·4	—	—	7120
18th	98·6	—	—	7760

Healed by primary union.

This case is merely inserted because of the mistake made in diagnosis, and the leucocyte curve associated with such a degree of twisted ovarian pedicle.

CONCLUSIONS.

At the outset let me say that I do not for one moment wish to ignore the importance attached by certain hæmatologists to the hæmoglobin, red corpuscles and colour index in appendicitis. Under certain conditions it is possible that such information could be of value to the clinician, yet by far the most important feature of the blood chart is brought out by the leucocytic reaction. Dr. DaCosta has suggested that whenever the percentage of hæmoglobin falls below 40 in appendicitis, it might be better to delay the operation in order to first treat the anæmia. Needless to say that such a method of procedure is not only unscientific in principle, but also fraught with considerable danger to the life of the patient.

The following conclusions are based entirely upon the above cases, all of which were investigated by myself; this I venture to regard as of some significance, simply because the results of one observer, provided they are sufficiently numerous, are more universal and less liable to technical errors than a similar number of results by several observers. In many of the cases of suppurative appendicitis it was possible to make several examinations prior to the operation, and it is not difficult to understand that several counts upon consecutive days are of more value than a single one. It is probable, for example, that the journey to hospital, of patients suffering from appendicitis, whether suppurative or catarrhal, is sufficient to unduly increase the leucocyte numeral so that a single count upon this day might be misleading.

The above results conclusively prove that in the great majority of cases of suppurative appendicitis, there is a very definite leucocytosis.

Briefly, these twenty-three cases of suppuration show the following analysis:—

				Per c.m.		Per c.m.
4 per cent.	gave a	leucocyte count	below	10000		
16	,,	,,	between	12000	and	15000
40	,,	,,	,,	15000	,,	20000
36	,,	,,	,,	20000	,,	30000
4	,,	,,	,,	30000	,,	40000

Thus 80 per cent of all cases give a leucocytosis above 15000 per c.m., and 40 per cent. above 20000 per c m. The maximum count recorded is 33160 per c.m., the minimum 9360 per c.m., and the average of all the twenty-three cases is 19250 per c.m., or more than double the average leucocyte count obtained in my cases of catarrhal or interstitial appendicitis.

Although this analysis suggests marked optimism concerning the value of leucocytosis in the diagnosis of suppurative appendicitis, I must point out that even a large abscess, with dense adhesions limiting it, may be accompanied by a normal leucocyte numeral. On the other hand, it is certain that advancing leucocytosis, as detected by several estimations, almost always means an advancing local inflammation (suppuration or peritonitis), which is not curable by rest in bed, and which may not be suggested by the pulse rate, heat value, or local conditions present.

My work upon leucocytosis has led me to the opinion that the leucocyte curve is a more delicate indicator of underlying pathological conditions in appendicitis, than either the pulse or the temperature, and is equal in value to that of local signs of inflammation.

The degree of leucocytosis cannot be relied upon to furnish correct information as to the amount of pus present, though generally a small abscess produces a slight leucocytic reaction, and a moderately sized abscess a still greater reaction. The degree of leucocytic increase is regulated probably by the amount of toxin given out by the local lesion, and this must depend, not only upon the degree of resistance to absorption as regulated by fibrous adhesions, but also upon the virulence of the special organism. Children have almost certainly a more sensitive leucocytic reaction than adults.

In none of my cases of suppurative appendicitis was the virulence of the inflammatory attack sufficiently great to paralyse the leucocytic response, and thus produce a normal or subnormal count, though it is always necessary to keep this possibility in mind.

The opening of an abscess in the region is occasionally followed by a maintained or increased leucocytosis lasting for a day or two; this especially occurs if the absorbing surface has been increased or disturbed by manipulation, and as I shall show later, is more common after chloroform than after ether anæsthesia. If the abscess drains well, the leucocytosis disappears within a few days of the operation, and does not reappear. Should the drainage be imperfect, giving rise to pent up discharge, the leucocyte curve may rise again, and continue to fluctuate according to the amount of retained products. The formation of a fresh abscess is accompanied by a fresh leucocytosis, which will continue until the pus is evacuated.

A piece of iodoform gauze, or a fæcal concretion lying at the bottom of a sinus is sufficient to prevent the leucocyte curve settling to its normal standard. I am satisfied that regular leucocyte estimations can be of signal assistance in giving information concerning the post-operative progress of suppurative appendicitis. Should the leucocytosis not disappear within a few days of the operation, a careful examination should be made of the local conditions present, in order to determine the cause of that delay.

The special leucocyte which undergoes increase is the polynuclear finely granular oxyphiles, and this occurs chiefly at the expense of the lymphocytes, to a less extent the polynuclear coarsely granular oxyphile and transitional cells.

In my three cases of appendicitis with general peritonitis, there was a well-marked leucocytosis present, the average count being 25950 per c.m., the whole of this increase consisting of polynuclear finely granular oxyphiles.

What has been said in reference to the value of leucocyte estimations in the post-operative progress of localised abscess applies equally to appendicitis with general peritonitis. Although a definite leucocytosis in general peritonitis does not necessarily indicate a good prognosis, it, at least, points to a vigorous reaction on the part of the patient, and I would suggest that, under such conditions, the most thorough surgical measures possible should be adopted. It is not difficult to understand that a thorough removal of the toxic products, during such a vigorous fight, is more likely to be attended by success, than when the constitutional reaction is already paralysed, as indicated by a normal or subnormal count.

As a general rule the leucocytes do not exceed the maximum normal (10000 per c m.) in catarrhal appendicitis, but that it may occasionally exceed that number there can be no doubt. In two of my six cases there are counts of 10400 per c.m. and 10800 per c.m., the lowest count obtained was 6560 per c.m., and the highest 10800 per c.m.; the average of all the cases being 8600 per c.m., which contrasts very strikingly with the average obtained in suppurative appendicitis, or in appendicitis with general peritonitis.

Whenever a case of so-called catarrhal or interstitial inflammation of the appendix gives rise to a definite leucocytosis, I cannot help thinking that there must be some super-added complication to account for it. Serous peritonitis, unlike serous pleurisy, produces a well-marked leucocytosis, in proof of which I could give several examples, and it is more than likely that in a certain proportion of cases of catarrhal appendicitis, a local peritonitis of this kind is present. The leucocytosis consequent upon a journey to hospital may be explained in this way; it, however, disappears after a few days' rest in bed, and this can be shown by counts taken on several consecutive days. Copious vomiting or diarrhœa is sufficient to cause an increase of the leucocytes. A stenosed appendix with a dilated and tense distal cavity containing pyogenic organisms is probably another factor in accounting for these few exceptions to the general rule. During wound healing, after appendectomy in catarrhal appendicitis, the leucocyte curve falls to normal on the second day, and does not rise again unless some complication arises, or, in other words, it is identical with the leucocyte curve of a wound healing by primary union.

In reviewing the effect of anæsthesia upon the leucocyte curve of the above mentioned cases, it is necessary to remember that there are correlative and simultaneous forces at work, such as the degree of hæmorrhage, and the effect of manipulation on the inflammatory area. It is, however, possible to make a broad comparison between the influence of ether and that of chloroform. Of the cases showing a definite leucocytosis prior to operation, seventeen were anæsthetised by ether, and five by chloroform. Of the seventeen ether cases, the average leucocyte count prior to operation was 18500 per c.m., whereas the average leucocyte count on the day following operation was 16500 per c.m., thus showing an average fall of 2000 per c.m. In the five chloroform cases, the average count prior to operation was 19000 per c.m., whereas the average count on the day following operation was 27000 per c.m.., thus showing an average increase of 8000 per c.m. Of the non-suppurative cases, four were anæsthetised by ether and two by chloroform. The average count of the four ether cases prior to operation was 8000 per c.m., whereas the average count on the day following operation was 11000 per c.m., thus showing an average rise of 3000 per c.m. Of the two chloroform cases, the average count prior to operation was 8000 per c.m., the average after operation being 14000 per c.m., thus showing an average rise of 6000 per c.m. From such data it is obvious that chloroform tends to produce a post-operative leucocytosis to a much greater extent than ether.

In conclusion, it is surely evident that there is valuable information to be obtained from a careful examination of the leucocytes in appendicitis; and although its reading cannot be regarded as pathognomonic of any one condition common to the disease, if considered in conjunction with that of other symptoms and physical signs, it will prove a valuable adjunct to the clinical picture of this important malady.

(To be continued).

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

Session 1901-1902.

The Fifth Ordinary Meeting of the Session was held in the Birmingham Medical Institute, on February 13th, 1902, Dr. E. MALINS, President, and later Dr. R. Saundby, being in the Chair.

Forty-one members were present.

Confirmation of Minutes.—The Minutes of the previous meeting were read, confirmed, and signed.

Election of Members.—The following members of the Association were elected members of the Branch, viz.:—W. E. Alldridge, 341, Dudley road, Birmingham; T. H. Galbraith, M.B., 1, George street, Wolverhampton; James Miller, M.B., 71, Stanmore road, Edgbaston; James Neal, 610, Coventry road, Birmingham; Thomas Salt, Washwood Heath, Birmingham; E. T. Walker, 362, Moseley road, Birmingham.

Perforated Gastric Ulcer.—Mr. George Heaton showed a girl, æt. 21, on whom he had operated successfully for a perforated Gastric Ulcer. She had had symptoms of gastric ulcer for 1½ years previously. On November 4th, 1901, she was suddenly seized with violent abdominal pain and collapse with vomiting. Peritonitis quickly set in. Abdominal section was performed twenty-seven hours after the actual perforation. The ulcer was a large one and situated close to the pylorus. The lower peritoneal sac contained a considerable quantity of fluid, and there was much lymph around the stomach and liver. The perforation was closed with a double row of Lembert sutures, and to strengthen these the falciform ligament of the liver was divided and its lower half fixed to the side of the perforation by a few silk sutures. The patient made a good recovery. Since the operation she had gained twenty-eight pounds in weight and had entirely lost all her digestive troubles.

Mr. Heaton remarked that this case was the fifth case of perforated gastric ulcer on which he had operated. Two cases had recovered, the remaining three had died. Prompt diagnosis and immediate surgical interference would in the future lessen the mortality of this extremely fatal complication of gastric ulcer.

Nephrectomy for huge Pyonephrosis due to the impaction of a small Calculus at the upper end of the Ureter.—Mr. Barling showed this specimen removed from a girl, æt. 21, who had suffered from discomfort in her left loin since early childhood. As time went on acute attacks of pain with vomiting and faintness were experienced. In October, 1901, a severe attack of pain occurred in the loin followed by the appearance of a tumour in the front of that region. This became painful and tender and at the time of admission to hospital extended upwards underneath the left costal arch downwards into the left iliac fossa and laterally from the internal margin of the left lumbar region nearly to the middle line in front. The kidney was removed by the oblique lumbar incision, and was found to be a mere lobulated sac of pus, no renal tissue remaining. Just where ureter and kidney pelvis meet, a small calculus was firmly impacted. An excellent recovery followed the operation.

Nephro-lithotomy for Renal and Ureteral Calculi.—Mr. Barling also showed two calculi removed from a lady, æt. 38, who, when recovering from a hysterectomy performed in London in 1900, suffered from severe pain in the right loin with vomiting and suppression of urine. The urgent symptoms subsided, but since that time there have been similar attacks at intervals, sometimes on the left side, at others on the right, but the latter have been of the greater severity. On November 27th, 1901, there was an intense attack of pain in the right loin with a severe rigor, followed by another rigor on the 29th, and another on the 30th, the temperature ranging from 99° to 104°. When seen on December 4th, there was intense pain and tenderness over the right kidney, which was very much enlarged. T. 101°. P. 108. Urine from ℥xx to ℥xl.; s.g., about 1,013, containing a few pus cells. Operation on December 6th showed the kidney to be very much enlarged, congested and softened; the pelvis was dilated and distended. At a point three inches from its commencement, the ureter was found to be blocked by a calculus, and in manipulating to allow of an incision on to this, the stone slipped away out of the ureter. An incision was then made into the pelvis of the kidney, evacuating some ounces of fœtid pus. The lower end of the kidney was found to be much dilated and its substance atrophied. In the dilated part a small stone, somewhat wedge-shaped, half an inch long and a quarter of an inch at its widest part, was found, evidently the ureteral stone. Another larger stone, an inch by half an inch, was also found in the same part of the organ. An excellent recovery followed the operation, and though at first there was a good deal of pus in the urine, this is now only microscopic in amount.

Functional Word-deafness.—Dr. A. H. Carter showed a woman, æt. 30, suffering from this condition.

Colon Catarrh and Muco-Membranous Colitis.—Dr. T. Stacey

Wilson read a paper on this subject, and showed a series of illustrative specimens of intestinal mucus. The following is a synopsis of the paper :—

Morbid conditions of Colon referred to, viz.—"Simple Catarrh," "Muco-Membranous Colitis," "Membranous Colitis," "Mucous Colic," "Typhlitis." Symptoms of these as usually described. Relationship of these to one another. Classification of cases of Colon Catarrh as suggested by the author's cases :—

1. Simple acute general Catarrh of the Colon—illustrative cases.

2. Sub acute and chronic Catarrh, mainly involving the transverse Colon.

3. Acute and sub-acute Catarrh, mainly involving the Cæcum and ascending Colon correctly designated Typhlitis ; symptoms and physical signs of this type ; its relationship to Appendicitis. Illustrative cases.

4. Chronic Catarrh mainly involving the Cæcum and ascending Colon.

Prognosis.

Treatment.—Dietetic, hygienic, medical.

Dr. Saundby, Mr. Deanesly, Dr. Kauffmann, Dr. Carter, and Mr. Heaton took part in the discussion, and Dr. Stacey Wilson replied.

MIDLAND MEDICAL SOCIETY.

The Sixth Ordinary Meeting was held on Wednesday evening, February 5th, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the chair.

The following were elected members of the Society : Miss Caroline O'Connor, M.B., Ch.B. Edin., and Messrs. Thomas Wolverson, M.R.C.S., L.R.C.P., and James Miller, B.Sc., M.B., Ch.B. Edin.

Spina Bifida.—Mr. Gamgee showed a patient, aged 14 months, upon whom he had operated for spina bifida two years ago. The tumour was in the lumbar region, and was the size of a Tangerine orange. The lower end of the spinal cord and the nerves were contained in the sac, and were adherent to the wall. The sac was opened, and those portions of it to which nerves and cord were not adherent were excised. The cord could not be returned into the spinal canal, and so was laid in the groove in the bottom of the sac, and then, free lateral incisions into the sheaths of the muscles having been made, the two erector spinæ muscles were brought together over the cord by means of silk sutures. A separate row of sutures brought the edges of the skin wound together. The patient was now perfectly well in every way.

Insular Sclerosis.—Dr. Douglas Stanley showed a case of insular sclerosis occurring in a boy, aged 12. The chief symptoms were very marked intention tremor, high-pitched voice, and some lingual paralysis. Nystagmus was present, but there was not great exaggeration of the tendon jerks.

Perforated Duodenal Ulcer.—Mr. Lucas read the notes of a case of perforated duodenal ulcer, which occurred in a young man, aged 20. He was admitted to the General Hospital on December 19th, 1901, at 5-0 p.m., complaining of severe abdominal pain of three hours' duration, and located about the umbilicus. He vomited immediately the pain came on, and again about one hour later. He had complained of "indigestion" for about a year, the pain in the stomach coming on about an hour after meals. No history of hæmatemesis, or other disease or injury. On admission the liver dulness was not impaired, and he only complained of severe pain and tenderness in the abdomen. Pulse, 80; temp., 99·8. At 12-0 midnight, the liver dulness had completely gone, and his general condition was much worse. At 1-0 a.m., the abdomen was opened, free gas escaped, and a perforation was found in the duodenum one inch from the pyloric orifice; the perforation was of the size of a split pea. About 6 ozs. of turbid fluid and flakes of lymph were sponged out of the abdominal cavity. The edges of the ulcer were brought together with a continuous silk suture, and further closed by two layers of interrupted sutures. A drainage tube was left in the wound, the remainder being closed. The subsequent course of the abdominal condition was in every way satisfactory, but the patient developed broncho-pneumonia and died on Dec. 29th, 1901. *Post-mortem*, there was no peritonitis, except a little lymph forming adhesions about the seat of perforation. The ulcer in the duodenum was soundly closed.

Double Pyosalpinx.—Dr. Purslow showed this specimen which he had removed by abdominal section from a young single woman. The patient when admitted to the Queen's Hospital, dated her illness from an attack of influenza, from which she had suffered twelve months previously; ever since then she had felt pains in the abdomen, and for five months had lost weight and strength, and had noticed a swelling in the abdomen. The tubes were equally enlarged, containing about five ounces of pus in each. The patient made a good recovery and is now at work again. The interest of the case lay in the etiology:—there was no evidence of gonorrhœa, and the hymen was virginal; no signs of tubercle in the lung or elsewhere could be discovered. An examination of the pus was made by Dr. Stanley, pathologist to the Hospital, and he reported that it contained no micro-organisms. Dr. Purslow was driven to the conclusion that the suppuration must have been due to the attack of influenza.

Dr. Douglas Heath read a paper on "Some Types of Eczema and their Treatment."

KIDDERMINSTER MEDICAL SOCIETY.

A meeting of this Society was held at the Kidderminster Infirmary, on Friday, February 7th, Mr. J. LIONEL STRETTON, President, in the Chair.

Cases.—The President showed:—1. A girl, æt. 22, upon whom he had performed excision of the elbow joint for tubercular disease five years ago. The limb remains perfectly strong, with good movements, and she is able to earn her living as a domestic servant.

2. A girl, æt. 22, with a peculiar development of the two last ribs. The 11th came as far forward as the linea semilunaris

on each side, and the 12th within an inch of the same line. There was no discomfort caused by the condition, which was only accidentally discovered by Mr. Stretton.

3. A malignant kidney removed through the loin from a woman, æt. 51.

4. The head of a femur removed by amputation at the hip joint for tubercular disease, from a boy, æt. 17.

5. A malignant mass in the mesentery, with twelve inches of intestine attached, removed from a man, æt. 68. An epithelioma was found in the intestine causing obstruction, and the growth in the mesentery was secondary glandular enlargement.

Mr. W. H. Moore showed:—1. A uterus which he had removed by the intra-vaginal method for malignant disease. Patient made a good recovery.

2. A uterus showing perforation through the anterior wall, the result of attempts that had been made to produce abortion; death followed from suppurative peritonitis.

3. An extra-uterine fœtation showing fœtus and ruptured "tube;" the fœtus was lying in the abdominal cavity, the placenta still *in situ* in the tube, with the cord passing through the opening.

Dr. Evans showed a girl, æt. 15, upon whom he had operated for cancrum oris, by splitting the cheek and scraping away the disease. Patient made a good recovery and there was likely to be little disfigurement.

Mr. A. C. Oldham read a paper on Rheumatism, and a discussion followed.

REVIEWS.

THE MENTAL FUNCTIONS OF THE BRAIN.*

The author of this work begins by stating that our knowledge of the mental functions of the brain has not made such advances as other branches of medical science. His work therefore aims at "clearing up the mystery" of mental functions, and also at demonstrating their cerebral sites. The writer believes that a different portion of the brain is affected according as the patient suffers from melancholia, mania, or delusions only. The practical outcome of such observations, "if future investigators confirm" them, would be an immense stimulus to brain surgery. It may be seen from this that the author does not agree with those who view pathological changes in the brain as affecting extensive portions of the cortex. The writer then proceeds to describe the pathology of melancholia, locating the lesion or lesions in the angular and supra-marginal gyri. "Irascible insanity" and "mania furiosa" are dependent on lesions of the middle portion of the cortex of the temporal lobe (p. 119). In like manner the various forms of mental disorders and certain diseases, such as epilepsy, are in the opinion of the author due to local anatomical changes. In chapter vii. the cerebellum is described as the seat of sexual instincts, and curious deductions are drawn from the size and conformation of the portion of the skull between the ears—a theory at one time very popular, but which we hardly expected to meet to-day as a serious proposition. We feel obliged to give some of the author's statements in reference to cerebellar ataxy. He says: "What relation is there discoverable between the successive stages of development of the cerebellum, from the moment of birth to the twentieth or thirtieth year, and the regularity of the locomotive movements? Are the movements of the man between twenty and thirty years more regular than those of the boy and girl from five to fifteen? Has it ever been proved by observation that individuals possessing a large cerebellum manifest more regular movements than persons in whom it is small? A man possessing a large cerebellum can be extremely awkward. . . . The falling backward in lesions of the cerebellum can at most prove an influence on the exterior muscles of the head, spine, pelvis—just those muscles that enter largely into activity in the sexual act. But it cannot be shown that the cerebellum exerts any influence, for instance, on manual dexterity.

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* The Mental Functions of the Brain. By Bernard Hollander, M.D. (Freiburg), M.R.C.S., L.R.C.P. Lond. London: Grant Richards.

"I am aware that cerebellar ataxy differs from locomotor ataxy. If I advocate, nevertheless, that there exists a possible connection between the two, it is simply by way of suggestion for future observers.

"First, locomotor ataxy can in most, if not all, cases be traced to syphilis, which means that promiscuous and possibly excessive gratification has preceded excesses *in venere* can be often proved. Hence, why not look to the cerebellum for the lesion as well as the cord."

This is a specimen of the kind of reasoning that prevails throughout the whole work.

In chapter ix., the subject of Phrenology is taken up and carried through the remainder of the book. The writer has certainly shown vast industry in looking up the literature of the subject and quotes freely from a great number of writers, especially Gall, in support of phrenology. When, however, some damaging statement is made by writers such as Maudsley, Bastian and others, we are treated to the most slashing sarcasm. At pages 435-6, under the heading "Mental Science, as taught by a London Physician, an M.D. (Gold Medallist)," certain statements made by this gentleman (who would surely have had no objection to be slain under his full name in rather good company) are quoted by the author, and characterised as "fairy tales, which may be told with impunity to a lay audience." Yet the writer is most sensitive to what he calls "worn out wit or sarcasm," when directed against "the great cause I am upholding," and such is his jealousy for the cause that he "replies to modern opponents with more civility than they have employed and they deserve."

It appears to us that Dr. Hollander has got into deep water. Neurologists all know, and freely admit, that certain broad principles in cranial conformation are associated with mental characteristics. The microcephalic is a well recognised type. But phrenology as such is more than many of us are prepared to accept. Nothwithstanding the arguments of Dr. Hollander, there is not the least doubt that considerable advances in our knowledge of cerebral conditions may be traced to the work of writers who have believed in "phrenology," and honour to whom honour is due; but the author of "The Mental Functions of the Brain" fails to show any balance in his estimation of the scope of modern neurology. We do not deny that the book is interesting—quite the contrary—but the author must not feel disappointed if he fail to bring in converts to his theory of phrenology. Indeed, had he been less biassed and more judicial, less learned in the lore of the past, and more accurate in his knowledge of modern neurology, he could have made a valuable contribution to medical literature.

SURGICAL DISEASES OF THE KIDNEY AND URETER, INCLUDING INJURIES, MALFORMATIONS, AND DISPLACEMENTS.*

Mr. Henry Morris commences his book with an account of the normal anatomy of the kidney, and then proceeds to describe the various anatomical abnormalities, which may be met in connection with it. As regards the normal anatomy of the kidney, there is nothing new to be said; but the author gives as clear and complete a description as might be expected from so experienced a writer on anatomy. The account of the various anatomical variations in position, size, shape, etc., of the kidneys, is by far the most complete that we remember to have read: and the author, by frequent reference to the specimens in the London museum, as well as to the literature of the subject, has done his work so well that this section of the book must, for a long time to come, be looked upon as containing the most valuable mass of information on the subject that can be gathered together.

Mr. Morris's conclusions on the subject of congenital absence of the kidney are so important from a clinical point of view, that they are worth quotation:—(1) The probability of a congenital absence of one kidney is exceedingly small.

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* Surgical Diseases of the Kidney and Ureter, including Injuries, Malformations, and Displacements. By Henry Morris, M.B., F.R.C.S. In Two Volumes. Vol. I. London: Cassell & Co. 1901.

(2) There is a much larger risk of meeting with a fused renal mass. (3) The presence of a renal mass in any abnormal position should be sufficiently suggestive of there being but a single kidney, to prevent nephrectomy being done without first ascertaining whether there is a second kidney or not. Again, further on, Mr. Morris says, that a practical rule for surgeons to bear in mind is that if nephrectomy is contemplated on any person, who has any congenital malformation, and more especially if the malformation is of the genito-urinary system, very particular care should be taken to ascertain if there are two kidneys or only one. The importance of these statements can hardly be over-estimated.

We are surprised to meet with the following sentence in a book written by Mr. Morris, whose reputation as an anatomist stands so high :—

"The term mesentery does not imply anatomically a complete investment of the whole organ by the peritoneum, otherwise it could not be applied to the peritoneal covering of the cæcum or colon."

We have always understood that it is an accepted fact that the cæcum is completed surrounded by peritoneum, and hence, has no mesentery.

The author's remarks on floating kidney are worthy of attention. He is an advocate of the operation of nephropexy, but holds that the presence of marked symptoms of hysteria is a contra-indication of operation. The mortality of this operation is given as slightly over 1 per cent., Mr. Morris himself having operated, in all, 57 times without a death. It would have been interesting, if we had been told in how many of these 57 cases the cure was permanent, and in how many the kidney again became moveable.

The subject of injuries of the kidney is most carefully dealt with ; but surely it is a mistake to quote, without any qualification, the statistics of Edler, giving the mortality in case of ruptured kidney, as 50 per cent. It is our impression that the death-rate is much lower than this. Operative treatment of ruptured kidney is but seldom required, as in so many cases the patient makes an uneventful recovery, but it is interesting to see what operative treatment Mr. Morris advises. It is this:—(1) "In severe hæmorrhage, make an exploratory incision in the loin. If the kidney is ruptured, but the fragments are still attached to the hilum, stuff the interstices with gauze; (2) Suture with superficial stitches the two portions of a kidney, if they are attached to the pelvis and hilum; (3) If vessels are found bleeding outside the hilum, apply forceps and ligature; if within the pelvis stuff with gauze." If we have any criticism to offer on this line of treatment, it is this—that, if any operation is to be performed in a case of ruptured kidney, it should preferably be nephrectomy; for there are so many cases on record, in which stuffing with gauze or stitching the parts of the organ together has been followed by secondary hæmorrhage.

We notice that, in speaking of penetrating wounds of the kidney, the author advises that the wound should be dressed with "a piece of lint soaked in carbolised oil." We are sorry to see the use of so dirty a dressing recommended by a surgeon of Mr. Morris's standing. It is stated that there are only nineteen cases of aneurism of the renal artery on record, and yet the author says that the knowledge that such a condition is occasionally the result of injury ought to be an additional inducement to surgeons, if no contra-indication is present, to explore early every kidney, which is seriously damaged by an accident. We can only think that this statement is not intended to be taken literally.

The chapters on urinary fever are to be specially commended, both as regards the way in which the pathology of the condition is discussed and as regards the clinical description. The section on renal fistula is by far the most complete that we remember to have met with, and on the whole the same remark applies to the chapter on hydronephrosis. In speaking of nephrectomy for pyonephrosis, Mr. Morris gives the sound advice that, as practical experience proves the results of primary nephrectomy to be inferior to those of nephrotomy, the former operation should be reserved for those cases, in which the secreting substance is totally destroyed, or in which drainage of the multilocular organ is imperfect. One of the best chapters in this volume is that on tumours of the kidney, and we may specially call attention to the excellence of the remarks on the differential diagnosis of renal tumours.

Taken as a whole, this first volume of Mr. Morris's book has impressed us most favourably, for the subject is dealt with in a thorough and exhaustive manner by a surgeon, who may be justly called one of the pioneers of Renal Surgery in this country.

A GUIDE TO THE MICROSCOPIC EXAMINATION OF THE EYE.*

Everyone who has had to investigate the anatomical and pathological structure of the eye will agree with Prof. Greeff "that the eye, in virtue of its peculiar form and composition, demands treatment differing in many respects from that sufficient for organs which are more consistent and uniform in structure, and the precise relations of whose parts it is less important to preserve." There are, moreover, certain processes which are adapted for the demonstration of the ocular structures solely. The scanty references to such processes in the ordinary textbooks of practical pathology made it almost impossible for any student to acquire an adequate knowledge of Eye Pathology unless he attended a special course of instruction on the subject—a matter in itself not easy to get in this country. In this respect this little manual supplies a distinct want, and all ophthalmologists and pathologists will be indebted to the author for its publication.

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* A Guide to the Microscopic Examination of the Eye. By Prof. R. Greeff, Surgeon to the Ophthalmic Department, Royal Charité Hospital, Berlin. Translated from the second German edition. By Hugh Walker, M.A., M.B., C.M., Assistant Surgeon and Pathologist to the Ophthalmic Department of the Glasgow Royal Infirmary.

It contains an adequate and accurate description of all the ordinary, and most of the special, methods used for the demonstration of the anatomical structures of the eye and their pathological variations.

The principles on which the different processes of hardening, fixing, cutting, staining, and mounting are based, are shortly, though lucidly explained Any student of medicine who has a good knowledge of ordinary anatomy and pathology, should have no difficulty in making a thorough and reliable examination of an eye, with the aid of this manual.

It cannot be expected that, in a book of this size, all the methods used in ophthalmic pathology should be described. Indeed the author makes particular mention of the fact, that the methods described are those which he has personally tested. It will be found, however, that all the older methods, as well as those of the most recent date, are included, provided they have been shown to possess some practical advantage in the demonstration of any anatomical or pathological structure in the eye. We think a little more stress might have been laid on the advantages of Formalin over Müller's and some of the older fixing solutions. One or two details in connection with the celloidin method might also have been treated more fully. No doubt the author has found the other methods equally efficient, and did not think it necessary to emphasise those methods which have gained a decided popularity in this country. However, each student will soon find which methods are most generally useful and efficient in his own hands. He will find in this handy volume a reliable guide to, and an accurate and lucid explanation of, all the methods he is ever likely to employ in the pathological examination of the eye.

The thanks of British ophthalmologists and pathologists are due to Mr. Hugh Walker for an accurate and readable translation of a work which should be found in every pathological laboratory.

INFANT FEEDING IN ITS RELATION TO HEALTH AND DISEASE.*

A well-known appreciation is to the effect that there is "some fine, confused feeding" in a haggis. Similarly it might be said of Dr. Fischer's book that there is some fine confused reading in it. The author's avowed object has been "to give details pertaining to the feeding of infants and children requiring breast-feeding or hand-feeding," in a work which should "serve as a guide to both the active practitioner and also to the beginner in medicine." In pursuit of this object, he has left apparently no branch of the subject unconsidered; he has freely given his own conclusions (often very valuable); he has quoted from countless authorities, and has produced an absolutely unreadable book. This unfortunate result is due to the entire lack of any method or arrangement in the presentation of his material. Thus we begin with a chapter on "The Anatomy and Physiology of the Infantile Stomach," in the middle of which we are given information about the secretion of saliva, as well as the location of the sucking centre. We return to the functions of the gastric juice, and then pass to chapter ii. Here, before we are allowed to continue the study of "the influence of gastric juice on pathogenic germs," we have to attend to some remarks on "the action of the saliva on various bacteria." In chapter iii. is interposed information on "Stomach-capacity," with illustrations. In chapter iv., all the digestive "Ferments and their Actions" are considered except the gastric, to which, however, chapter v. bring us back with the unexpected opening, "another property of gastric juice." But the main part of this chapter is concerned with the intestines. Chapter vi. opens with the liver and bile, but suddenly reverts to "Ferments and Absorption." We cannot help thinking that chapter xxxiv., "Infant Stools," would have been more in place in this early part of the book than where it is, between xxxiii., "Modified Milk," and xxxv., "Nathan Straus Milk Laboratories and similar Charities," and that it is a mistake to separate "Constituents of Milk" from "Variations of Milk" and "Chemical Examination of Breast-Milk," by the insertion of a chapter on "Bacteria of the Intestine." It is not surprising with such looseness of arrangement to find that repetitions have not been avoided, and that paragraphs have been admitted whose value to the book at all may be doubted, as well as their position among the contents criticised. It would not be worth while to point out these defects, but that the book really contains most valuable material, and much information which is not otherwise very accessible. The remarks on water as an infant's beverage, on the value of raw cow's milk, on the evil results of the use of condensed milk, and on dieting in constipation may particularly be recommended to those who care to struggle with the difficulties the author has put in the way of his readers. The weakest part of the book is physiological, and here there are some questionable statements, as that gastric juice contains a ferment which splits up fats into glycerine and fatty acids (p. 19). But the book wants rewriting from beginning to end, and Dr. Fischer may reasonably be asked, when doing so, to arrange his material according to some plan, to set forth his quotations with more evident purpose, making it more clear also when he ceases to quote, and to rewrite in English. "Noon-time," "to leave the baby rest," "feeding it to the infant" may be passed as American eccentricities, but "the stomach is emptied much slower and less complete," "functionates," "to thoroughly mix the same before allowing" can be tolerated nowhere.

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* Infant Feeding in its Relation to Health and Disease. By Louis Fischer, M.D. Philadelphia, Chicago: F. A. Davis Company. 1901.

A TEXTBOOK OF EMBRYOLOGY.*

EMBRYOLOGY is one of the departments of Biology that has grown so much within the last few years that it has now an extensive literature of its own. When such an extensive amount of writing exists on a subject it follows for a certainty that the student requires some handy manual to guide him in his first efforts at acquiring a knowledge of that subject. Such a manual is that written by Dr. Heisler of Philadelphia. It is a book which we have perused with much pleasure and considerable profit. It is clear, concise, and like so many of Messrs. Saunders's publications extremely well illustrated. The book is a textbook full enough to be of real value, but not ot that extensive character ill suited to the student who is not specialising in the more erudite departments ot anatomy. We congratulate the writer on the method he has followed, that of making each chapter almost complete in itself so as to facilitate reference. We may particularly refer to the chapter (xiii) on the Development of the Genito-Urinary System as a model of clear scientific enunciation of a very complicated subject, but one ot such importance to the Physician and the Surgeon that both are perforce obliged to have some knowledge of it.

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* A Textbook of Embryology. By John Clement Heisler, M.D.

We can most confidently recommend Dr Heisler's book to the student of biology or medicine for his careful study, if his aim be to acquire a sound and practical acquaintance with the subject of Embryology.

ANATOMICAL ATLAS OF OBSTETRICS WITH SPECIAL REFERENCE TO DIAGNOSIS AND TREATMENT.*

ATLAS AND EPITOME OF LABOUR AND OPERATIVE OBSTETRICS.†

THESE two volumes of a handy little series of Atlases are complementary to each other. The first Atlas deals with obstetrics especially from the clinical and pathological point of view, while the second approaches the subject more from the mechanical and surgical stand-point. Since the works are published primarily as Atlases, they will of course in the first place be judged according to the success or otherwise of the illustrations they contain. As regards the diagrams, which are present in profusion in both volumes, it may be said that they succeed very well in conveying ideas of the conditions and processes they are intended to represent. Many of the coloured prints give excellent and very real renderings of various pathological conditions. At the end of the smaller volume, that on Labour and Operative Obstetrics, 122 diagrams with short but sufficient explanations to each, make up about half the bulk of the book, and deal very fully with the presentations, the mechanism of labour, and with the different operative obstetric methods. This series of diagrams forms a very useful and complete pictorial aid to the proper understanding of the various conditions dealt with.

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* Anatomical Atlas of Obstetrics with special reference to Diagnosis and Treatment. By Dr. Oskar Schaeffer. Authorised Translation from the second revised German edition. Edited by J. Clifton Edgar, A.M., M.D. London and Philadelphia: W. B. Saunders and Company. 1901.

† Atlas and Epitome of Labour and Operative Obstetrics. By Dr. Oscar Schaeffer. Authorised Translation from the fifth revised German edition. Edited by J. Clifton Edgar, A.M., M.B. London and Philadelphia: W. B. Saunders and Company. 1901.

In addition to the illustrations, a succinct epitome of most of the subjects usually treated in manuals of obstetrics forms an important part of the bulk of each volume. The letterpress thus forms a short résumé of the present state of knowledge and practice obtaining in Germany, which differs however in some respects from British theory and practice. For this reason the Atlases are likely in this country to be of greater service to those who are already qualified, than to students preparing for examination. The concise style of the text does not always lend itself to clearness of expression, so that here and there one comes across a sentence which is difficult to understand. On the whole, however, the work of translation has been well done, and the book is likely to be a useful remembrancer to those who have already obtained a sound working knowledge of midwifery, and who are thus enabled to accept in a critical spirit the teaching here given. That the Atlases in the country in which they originated have supplied a want is evidenced by the fact that the smaller of the two is already in its fifth edition.

The publishers have done their work well; the type is clear, the paper good, the binding strong, and the illustrations are well reproduced.

A TEXTBOOK OF THE DISEASES OF WOMEN.*

THIS voluminous treatise is prefaced by an account of the development of the female genitals followed by a description of their anatomy, the two being so exhaustively worked out that they occupy no less than 115 pages. This is succeeded by 120 pages dealing with examination and treatment in general, and then at length the special diseases are described.

It is easy to see, therefore, that this volume may be invaluable as a work of reference, but is rather too bulky to be recommended to the student as a desirable book to read for examination purposes. The various positions used in gynæcological examination and the special instruments are freely illustrated, and a chapter is devoted to electrical treatment which the author considers of great value. There is an interesting chapter also on hermaphroditism and hypospadias and epispadias in the female, and masturbation is discussed and clitoridectomy advised in certain cases.

For complete rupture of the perinæum, the author has found Tait's operation superior to all others.

The technique of the major operations is described with great care and completeness, and the many operations known by the names of those surgeons who introduced them find places in almost bewildering profusion.

The whole work is lavishly illustrated, and the printing and index are good. On the whole this volume may be recommended as a very complete treatise on the subject and should prove invaluable to the practitioner for the purpose of reference. Its popularity may be judged by the fact that the last edition was exhausted in two years.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

WE have received specimens from Messrs. Burroughs & Wellcome of a Tabloid containing $\frac{1}{600}$ grain of sulphate of atropine for use in dilating the pupils. The Tabloid is intended to replace the drop bottle in medical practice, and has obvious advantages. The same firm also send us Soloids containing ¼ grain of nitro-propiol. One of these Soloids, boiled with 10 minims of sugar-containing urine and 3 drachms of water, gives to the mixture a deep blue colour. The test is one which has recently been advocated as superior to that in general use, and though we are not satisfied that this superiority has been established, it is worthy of trial.

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* A Textbook of the Diseases of Women. By Henry J. Garrigues, A.M., M.D. Third edition. Philadelphia: W. B. Saunders and Co.

We have also to acknowledge the receipt of a leather letter case, card case and season-ticket case from Messrs. Letts & Co., who have connected with the sale of these articles a scheme for insurance against small-pox.

New Books, etc., Received.

From W. B. Saunders and Company—

Nothnagel's Encyclopedia of Practical Medicine. Variola, Vaccination, Varicella, Cholera, Erysipelas. Whooping-Cough. Hay Fever. By H. IMMERMANN, TH. VON JURGENSEN, C. LIEBERMEISTER, H. LENHARTZ, G. STICKER. Edited, with additions, by JOHN W. MOORE, M.D., F.R.C.P. Authorised Translation from the German, under the Editorial Supervision of ALFRED STENGEL, M.D.

The Four Epochs of Woman's Life. By ANNA M. GALBRAITH, M.D., with an Introductory Note by JOHN H. MUSSER, M.D.

From Macmillan and Co. Limited—

Some Thoughts on the Principles of Local Treatment in Diseases of the Upper Air Passages. By SIR FELIX SEMON, M.D., F.R.C.P.

We have also to acknowledge the following—

Anisometropia, and other Papers by Dr. ALEXANDER DUANE.

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THE
BIRMINGHAM MEDICAL REVIEW.
APRIL, 1902.

ORIGINAL COMMUNICATIONS.

CLINICAL LECTURE ON UMBILICAL HERNIA.*

BY GILBERT BARLING, M.B., B.S., F.R C.S.,
SURGEON TO THE BIRMINGHAM GENERAL HOSPITAL.

Gentlemen,

We have recently had three cases of umbilical hernia admitted under my care, and as they afford some useful lessons and contrasts, I propose to take them for the subject of my lecture to-day.

Case 1.—Mrs. B., a stout woman, æt. 55, the mother of fifteen children, was admitted on December 16th, 1901, complaining of an umbilical hernia which had existed twenty-five years, but which had become acutely strangulated some thirty hours before admission. At that time the hernia, which had hitherto been partly reducible, became intensely painful, with a feeling of nausea, which was soon followed by vomiting, and this continued till the time of operation; the bowels acted a little while before strangulation set in. On admission, the patient was complaining of intense pain in the hernia which was about the size of an ordinary orange, was extremely tense, and was blistered on its surface; but the explanation of the blebs was found in the applications that had been made to relieve the pain. Reduction of the hernia without operation was quite out of the question.

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* Delivered at the General Hospital, January 23rd, 1902.

Operation.—Under ether, an incision was made in the middle line just above the hernia, and when the abdomen was opened a finger was passed in and found a small orifice with an extremely tight grasp of the hernial contents. Very carefully the sac was laid open from above, and was found to contain a loop of about four inches of small intestine of a deep purple black colour, but with its peritoneal surface glistening, and with some adherent omentum between the surface of the bowel and the sac. After enlarging the very tense constriction, the intestine was released and then drawn out of the wound, when it was found that at the upper point of strangulation of the intestine there was a greyish white line across the bowel, which was here quite dead and ready to give way. An immediate resection was therefore made and about six inches of gut were removed, so that perfectly healthly tissues were left for subsequent union. In the process of the resection two points are worth emphasising; first, that by the aid of an aneurism needle all the mesenteric vessels were secured before being divided, so that practically no blood was lost and a very brief time was occupied in securing the vessels; the other point is that the intestine was divided at a slightly obtuse angle to the line of the supplying blood vessels, so that the portion of the intestine opposite the mesentery and farthest from it was well supplied with blood—this is essential for good repair. Union of the divided ends was made with a one inch Murphy button, the intestine was replaced, the adherent omentum, the sac, and the overlying loose skin were removed, and as good a radical cure as could be effected was made. It was not possible to secure good muscular tissue on each side to approximate as the recti were thinned and atrophied, so buried mattress sutures of silkworm gut were employed to bring together a broad flange of aponeurotic tissues, and finally the skin was sutured.

The whole operation occupied nearly an hour, but was well borne, and recovery was absolutely uneventful.

You see this patient to-day with a good strong firm scar supported by an abdominal belt, for without this further yielding is likely to occur. The points to be emphasised in this case are that the hernia was a small one, that the constriction was extremely severe, and that the gangrene was produced at the point of constriction in less than thirty-six hours. The gangrene in strangulated hernia may occur either at the point of constriction, or about the middle of the strangulated loop, and cases like this should impress upon us the necessity of always examining the point of constriction before allowing the intestine to return in the abdomen.

Case 2.—By a curious coincidence, lying in the next bed to case 1 was a stout woman, æt. 52, the mother of eleven children, who had been under my care seven years previously for a small umbilical hernia, in which strangulation had existed four days and was due to a dense band in the sac. As in case 1, there was constriction gangrene of the intestine which was treated by resection and immediate union in the manner above described, with a very good recovery. I did not then attempt a radical cure of the hernia as in case 1; probably I looked upon intestinal resection then as a more hazardous proceeding than I do now.

Since this operation I have from time to time seen the patient, always with an increasing hernia most difficult to relieve by any kind of support. Latterly, the surface of the hernia had become ulcerated, and in several places omentum had protruded. The patient was therefore admitted for a radical cure, which was performed on the lines described in case 1, though the operation was a more formidable one, as at least a couple of pounds of omentum had to be removed. A good firm scar is the result, and with care in wearing a well fitting abdominal belt the patient gets about in comfort, which she could not do before, and in safety also. This case is quoted to show the advisability, when it is by any means possible, of doing a radical cure after the relief of strangulation in umbilical hernia.

Case 3.—A stout woman, æt. 58, the mother of fourteen children, was admitted on January 13th, 1902, with a very large umbilical hernia. This was of long standing and was steadily increasing in size, but did not give rise to acute symptoms until January 12th, when, during a fit of severe coughing, due to bronchitis from which she had suffered since January 8th, the hernia became very large and painful, and vomiting set in. On admission, the patient was in a good deal of distress from pain and frequent vomiting, whilst the hernia, as large as one's head, was extremely tense and the skin over it quite livid in places owing to the pressure from within. From the extreme tension there was not the faintest hope of reduction by taxis, and operation was therefore proceeded with at once. The abdomen was opened in the middle line above the hernia, and then very cautiously the sac was opened in its whole extent. It contained large and small intestine and omentum moderately congested and very little damaged at the points of constriction, in marked contrast to the conditions found in case 1, though strangulation had existed about the same length of time in the two cases. The adherent intestine was liberated and returned, the sac with a large quantity of adherent omentum and most of the overlying skin was removed, and as the muscular tissue of the recti muscles was too feeble and too widely separated to be approximated, I utilised the aponeurotic tissues and buried mattress sutures of silkworm gut to repair the weakness in the abdominal wall.

The patient is making an easy recovery, but to prevent a return of her hernia a well fitting abdominal belt must be worn.

You will observe that all these women were well on in the middle period of life, all were very fat and had borne numerous children, in fact they were typical subjects for umbilical hernia. Such patients suffer great inconvenience from their ruptures partly from their tendency to grow fat, partly from carelessness in feeding and in neglecting to wear an efficient support. They also of course incur not only inconvenience but also actual danger to life from strangulation.

What can we do to relieve them? In the first instance we can give them advice as to the avoidance of fat-producing foods, and though most of it will fall on deaf ears some good effect will be produced, and the doctor's conscience at all events will be clear. We must also tell them to avoid notoriously indigestible foods, and over-eating even of those that are reasonably wholesome. Want of care in such matters often leads to incarceration in large umbilical herniæ, owing to the distension of the herniated intestine by flatus and by undigested and fermenting food. The attraction of pork and young potatoes or simular unsuitable food seems, despite medical warnings, to be too great for some of these patients, and they pay the price in an attack of incarceration which may eventually pass on to one of strangulation.

In the matter of supporting the hernia much may be done by an intelligent instrument maker; no regular pattern of support will suit all cases. Some herniæ are large, others small; some are reducible, others irreducible; in some patients the support rides up and must be kept in place by perineal bands, in others it slips down and needs shoulder straps and sometimes needs anchoring in both directions.

Despite all care, many of these herniæ become excoriated, requiring the patients to lie in bed to secure healing, and this is liable to recur. In a certain number of cases then, from the discomfort and inconvenience the hernia produces, the surgeon will be asked for, or will himself suggest, some operative measures for relief; in fact the question of radical cure comes to the fore.

Radical cure for some forms of hernia is what its name expresses; but in others it is not, for unless a support is worn after operation the hernia recurs. This is generally the case in umbilical hernia in which the conditions are unfavourable to a radical cure, the unfavourable conditions being the steadily increasing fatness of the patient, often the persistence of a cough from chronic bronchitis, and the difficulty generally in obtaining good material to close the defect in the abdominal wall, owing to the stretched and atrophied state of the recti muscles. Under the pressure of necessity as described above we must, however, do, not what we would but what we can, and for the details I refer you to the operation described in case 1.

This operation should be done in patients who are unable to find a comfortable and efficient support for their herniæ, or in those, as in case 2, where there is excoriation or even perhaps prolapse of omentum through the skin. Again, the same procedure should be followed when operating for strangulation, always assuming that the patient is a fit subject for the operation and able to bear it without adding considerably to the risk to life, and this remark applies equally to the operation in patients without strangulation.

To refer again for a minute to the cases of strangulation just described, you will find that they are fairly typical of the two classes of strangulated umbilical hernia you will meet with.

Case 1 is the type of the small hernia in which, as a rule, strangulation is very tight and severe, and early operation is urgently called for as gangrene may speedily result. I had, not very long ago, a tragic case of this kind in a man with a hernia not larger than a big horse chestnut. Strangulation had existed four days, and the man was dying with gangrene of a short loop of small intestine.

Case 3 is a type of the large hernia with a big ring, and in these strangulation is not so severe, and the urgency for immediate operation may not be so great. I always hesitate to suggest that any case suspected to be a strangulated hernia is not urgent for operation, and I do so here in a very guarded way. Everyone, however, who has seen a good number of large umbilical herniæ with acute symptoms, will recognise that it is at times most difficult to be sure whether the condition is one of *strangulation*, or merely of *incarceration*. Let me briefly relate an illustrative case. I was asked to see in the country a lady, æt. 75, the subject of a very large umbilical hernia. The history of the illness for which I saw her was as follows: she was in her usual health, the hernia partly reducible, on December 25th, and her bowels acted that morning. Later in the day, after a rather unwise meal, she suffered severe pain in the rupture, vomited several times bile-stained mucus, and was unable to pass any flatus. On December 26th some opium was administered and she vomited scarcely at all, but the bowels did not act, nor was any flatus passed, and the hernia remained large and painful. I saw the patient on the evening of the 27th, and found her vomiting occasionally a brownish coloured fluid of disagreeable odour. The hernia was not tender, but was quite irreducible and varying very considerably at times in its tension, evidently from peristalsis in the intestine. The bowels were still absolutely obstructed; the pulse was 86.

The question I had to consider was whether the hernia was incarcerated or strangulated, and if the latter, what was to be done; for bearing upon this I should mention that the patient was much opposed to operation, she was very stout, and the subject of aortic valve mischief. As there was no train available for me to return that night, and as from the varying tension in the hernia I thought incarceration the likelier of the alternatives, I felt justified in not pressing any operative measures, but decided to leave any question of operation until the morning. From the time I saw the patient in the evening until 8 o'clock the next morning nothing at all was given by the mouth, and three large enemata with turpentine were administered during the same time. When I saw the patient on the morning of the 28th, her pulse had fallen to 76, flatus had been passed freely, vomiting had ceased, the hernia was nearly free from discomfort and was not tense to any degree. It appeared to me certain therefore that the condition was one of incarceration, and I felt justified in returning home with the feeling that the patient was on the way to recovery, which was borne out by the subsequent history.

In a case such as this, with no very urgent symptoms, with a pulse only moderately quickened, and with a facial expression not indicative of much distress, it is justifiable to wait some hours to see what starvation and enemata will do. If at the end of from six to twelve hours relief has not been obtained, there should be no further delay, as strangulation may be taken to exist. Above all things, if incarceration is suspected, do not give purgatives, they are not nearly as likely to succeed as the milder measures described above, and if they do not succeed they greatly aggravate the patient's distress, and do actual harm.

I have notes of an old woman who has several times been an inmate of the hospital. She is hugely stout, suffers from chronic bronchitis and emphysema, and has a large umbilical hernia. On five occasions she has been under my care with symptoms suggestive of strangulation, pain and tension in the hernia, vomiting and complete obstruction. On the first occasion, I operated and found moderate strangulation of large and small intestine, and much adherent omentum, but a radical cure was out of the question, the patient's lungs and heart being so much embarrassed. On the second and third occasions, I hoped that the condition was one of incarceration from undigested food, and had the satisfaction of seeing the symptoms yield to starvation and enemata. On the fourth occasion, I thought I had to deal with the same condition, but the treatment formerly successful, failed, and at the end of twelve hours I again had to operate, with success it is true, but without being able to do a radical cure owing to the state of the chest. On the fifth occasion, although there was frequent vomiting, and absolute obstruction for twenty-four hours, the tension in the hernia seemed so moderate, that it seemed not unlikely the symptoms could be relieved by starvation and enemata, and this proved to be true. The case is an interesting one as showing it is not easy to differentiate between incarceration and strangulation, and it shows also very well the misery and anxiety such a hernia brings. If only the patient's general condition had admitted of such an attempt at radical cure as I have described earlier, she would have been saved much distress and danger, and her condition is a strong argument for radical cure whenever possible in cases of strangulated umbilical hernia.

THE CLINICAL SIGNIFICANCE OF LEUCOCYTOSIS.

BY JOHN T. HEWETSON, M.D. (EDIN.), F.R.C.S. (ENG.).

(*Continued from page 173.*)

34.—F. B., æt. 39, male. Perigastric abscess, following a perforated gastric ulcer; symptoms of perforation occurred about a month ago.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 13th	100·5	100	24	15280

Operation revealed an abscess containing about two ounces of fœtid pus, well shut off by adhesions, situated between the stomach and the anterior abdominal wall. Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
14th	98·6	85	24	14400
15th	99	84	22	12000
16th	98	88	20	15760
17th	98·4	90	20	14960
18th	99	112	24	13360
19th	100	106	24	18080
21st	99·8	100	24	12480
23rd	100·6	90	22	15280
28th	97·4	76	22	7280
31st	98·6	76	22	12160
June 5th	98·6	80	20	10240

The wound was dressed daily, and it discharged freely until May 23rd. On June 1st it was practically healed.

The after-treatment of this case is sufficiently instructive to merit a few remarks. The abscess did not drain well, due partly to its position and partly to the irregularity of its interior. This imperfect drainage explains not only the continued leucocytic increase, but also the fluctuating character of the leucocyte curve. The last blood examination, made a few days after the wound had healed, is scarcely satisfactory, and it is of interest because a few months after his discharge from hospital he was re-admitted with all the aggravated symptoms of his primary condition. Such a terminal leucocytic reaction corroborates the suggestion that, even in the early days of June, there must have been a slumbering pyogenic focus beneath the placid scar, probably in the base of the gastric ulcer, which later on broke out into more vigorous action.

35.—M. B., æt. 28, female. This patient passed through an attack of catarrhal appendicitis several weeks ago. The temperature, however, never settled to the normal, but continued to rise to 101° or 102° every evening, falling to normal in the morning. She complained of no pain or discomfort whatever, and a careful physical examination failed to elicit any obvious cause for the fluctuating heat value, fairly rapid emaciation, and weakness of the patient.

Bacteriological cultivations from the blood were quite sterile.

	Temp.	Pulse	Resp.	Leucocytes per c.m.
July 13th, 1900	101	104	36	38720
16th	102·4	104	28	28560

July 19th Suddenly coughed up half a pint of pus from the lungs.

20th	101	116	28	21680

Sent to the Jaffray Hospital. Died August 4th. Autopsy revealed a large left-sided sub-phrenic abscess, perforating the diaphragm and bursting into the left lung. A few adhesions were visible in the region of the appendix, which otherwise was normal. As no mention is made of the stomach in the *post-mortem* report, it is one's duty to assume that this organ was normal, and that the sub-phrenic abscess was not the result of a subacute gastric perforation. The moral of such a tragic condition surely is, no matter what the origin of the abscess, that given an acute abdominal illness like appendicitis or gastric perforation, regular leucocyte estimations would be of value in revealing the onset of obscure suppurative sequelæ. It is probable, had such estimations been made in this case during and after her attack of appendicitis, that suppuration would have been discovered early and efficiently dealt with. The leucocytosis in this case was very pronounced; it suggested to my mind three conditions—unresolved pneumonia, obscure suppuration, and some form of blood infection. There was no history whatever of pneumonia, and the blood which I examined on two occasions was quite sterile, so that I was led to the opinion that the patient was suffering from some deeply seated abscess producing no local symptoms whatever. The sudden emission of pus from the lung confirmed that opinion, and threw considerable light upon its locality. The general opinion was that the patient suffered from pulmonary tuberculosis; a few râles, with indefinite bronchial breathing at the right base, appeared to support that view, but such a high leucocytosis could not be explained in this way.

36.—S. S., æt. 43, female. This patient came into hospital with a large left lumbar abscess, secondary to kidney mischief. The abscess, which was regarded by the surgeon as a tuberculous one, was opened on July 13th. The kidney was not explored. It continued to drain freely for a week or ten days; at the time of my first leucocyte count, the discharge from the sinus was very small in quantity, but the patient had commenced to complain of severe abdominal pain, accompanied by marked tenderness over the left kidney. The case was regarded as one of tubercle of the kidney with extension to the peritoneum and lungs.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 30th, 1900	100·6	144	28	39680
31st	100	—	—	40080
Aug. 1st	99·4	—	—	37920
4th	98·6	—	—	57440
8th	98·6	—	—	32480

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	91

	Per cent.
Small lymphocytes - - - -	6
Large lymphocytes - - - -	2·6
Polynuclear coarsely granular oxyphiles -	·2
Mast cells - - - - - -	·2

Patient died about the middle of August.

Autopsy revealed a large ragged stone filling up the pelvis of the left kidney; small abscesses in the kidney substance; small collections of pus were found amongst the matted coils of the small intestine some of which had ulcerated into the lumen of the gut. The peritoneal infection was due to a large perforation in the pelvis of the kidney through which a fragment of the calculus projected. There was no pulmonary tuberculosis.

Had a leucocyte count been made in this case before the lumbar abscess was opened, it would probably have led the surgeon to regard the case as non-tubercular, and with that idea in mind he would have explored the kidney for stone, which would have been found without the slightest difficulty. A pure tuberculosis gives no leucocytic increase; tubercle plus sepsis gives a definite increase; so in deciding whether a pyonephrosis is a tubercular or a calculous condition this fact must always be borne in mind. In this particular case a leucocyte chart would probably have been of great value.

37.—F. B., æt. 13, male. Ulcer on the right foot two weeks ago; tender enlarged inguinal glands; tender lump in the right iliac fossa. The surgeon in charge does not think that suppuration had been established.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 18th, 1900	101·8	—	—	19840
19th	100·4	—	—	19360

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	83
Small lymphocytes - - - -	13·2
Large lymphocytes - - - -	2·2
Polynuclear coarsely granular oxyphiles	1·6

Aug. 21st	101·8	—	—	28480

Operation performed; incision made into right iliac fossa; no pus was found. Anæsthetic—Ether.

	Temp.	Pulse	Resp.	Leucocytes. per c.m.
Aug. 22nd	102	112	36	28240
23rd	101	92	30	29680

24th While the house-surgeon was dressing the case on this day, a large abscess containing several ounces of pus was burst open as a result of firm palpation in the region of the wound.

	Temp.	Pulse	Resp.	Leucocytes. per c.m.
25th	98·6	80	28	16240
26th	98·6	60	20	13440
28th	98·6	—	—	14960
31st	98·6	—	—	11840
Sept. 4th	98·6	—	—	9360

The wound discharged freely from August 24th, and was healed on September 2nd. The patient left hospital on September 11th. It is practically certain that the incision made on August 24th missed the existing abscess. Ether was the anæsthetic, and unless increasing suppuration had existed the leucocyte numeral would not have been maintained at such a high value for two days. After the pus was accidentally evacuated, the leucocytes, temperature, and pulse rapidly fell to normal.

From this limited number of abdominal suppurations, it is possible to realise that very much the same leucocytic reaction is to be found as in suppurative appendicitis, which advances and retrogresses according to the special phase of the pyogenic process. So that, given a definite leucocytosis in an acute inflammatory condition of the abdomen, it is necessary to bear in mind that it gives no clue to the origin of the inflammatory process. It might be, for example, appendix, fallopian tube, ovary, kidney, gall bladder, stomach; then again, internal and external strangulated hernia, acute intestinal obstruction, produce a definite leucocytosis. Advanced malignant disease of the intestine frequently gives rise to a well marked increase of leucocytes in the blood. Many conditions, however, which are frequently mistaken for suppurative appendicitis or other inflammatory conditions, never of themselves produce any leucocytic increase, such, for example, as enteric fever, intestinal colic, biliary and renal colic unattended by inflammatory phenomena, floating kidney, impacted fæces, the various abdominal neuralgias, and tuberculous peritonitis or adenitis.

OTHER LOCALISED ABSCESSES.

38.—J. L., æt. 28, male. Acute abscess of neck, following a sore throat; no sore throat at present.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 26th	104	—	—	21200

Opened same evening, pus evacuated. Anæsthetic—A.C.E. mixture.

27th	101	—	—	16800
28th	99	—	—	13840
29th	99	—	—	9360
July 2nd	98 6	—	—	10080

Small abcess appeared on forearm; being fomented.

11th	98·6	—	—	12640

Opened same evening.

13th	98·6	—	—	6880

Discharged well.

39.—M. B., æt. 15, female. Abscess of neck, one week's duration, due to a carious tooth.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug 8th	100	—	—	21520

9th. Abcess opened; tooth extracted. Anæsthetic—A.C.E. mixture and ether.

11th	99·2	—	—	13360
13th	98·4	—	—	11200
15th	98	—	—	13680
18th	99	—	—	8720
22nd	98·4	—	—	6800

Discharged well.

40.—F. C., æt. 37, male. Suppurative parotitis.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 8th	99·4	—	—	14320

Hot fomentations applied.

12th	99·4	—	—	11200

Incision made; about one drachm of pus escaped.

17th	N.	—	—	8400

Recovery.

41.—J. G., æt. 56, female. Small abscess of breast, following cracked nipple.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 10th	100	—	—	14000

Operation; incision; ℥ss to ℥j of pus evacuated. Anæsthetic—Gas, ether, and chloroform.

Sept. 11th	99·6	—	—	16560
12th	N.	—	—	13120
17th	98	—	—	9680

42.—E. P., æt. 20, female. Swollen tender breast; probable abscess.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 24th	N.	—	—	12640

Operation; no actual abscess cavity found, but acute general inflammation of breast.

26th	N.	—	—	9840
28th	N.	—	—	6240

Recovery.

These five cases are of interest in showing that abscesses in other parts of the body besides the peritoneum produce a definite leucocytosis. The blood count was of no value in the diagnosis, since in the above-mentioned conditions suppuration was easily determined by physical examination alone.

SUPPURATIVE PLEURISY OR EMPYEMA.

43.—A. H., æt. 12, male.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 29th, 1900	98	120	26	14080
July 2nd	98	—	—	21200

3rd Operation; freely opened and drained. Anæsthetic—Chloroform.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
4th	100	—	—	25120
6th	98·8	—	—	12480
10th	97.8	—	—	12160
16th	98	—	—	13360

Still discharging.

This patient left hospital still discharging, and it is obvious that his leucocyte count had not fallen to the normal.

44.—E. P., æt. 21, male.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 12th, 1900	103	136	48	15280

Operation same evening; a large amount of pus was evacuated. Anæsthetic—Ethyl chloride locally.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
13th	102	120	52	9360
14th	99	—	—	16640
16th	99·6	—	—	11360
19th	99·4	—	—	17120
26th	100·6	—	—	17280
Aug. 3rd	100	—	—	17920

Still discharging freely.

The rapid fall of the leucocyte curve following evacuation under local anæsthesia is somewhat interesting. The patient left hospital still discharging, but was re-admitted in a few weeks with aggravated symptoms of the same disease.

45.—W. P., æt. 5., male.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 6th	98.2	96	24	21840

Operation same evening, large amount of pus being evacuated.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 7th	99·2	100	28	12960
20th	103	150	40	29040
27th	98·2	116	40	17250
Aug. 7th	98·4	104	34	20400

Left for the Jaffray Hospital, still discharging.

46.—S. H., æt. 2, female. Had pneumonia about ten days ago; the temperature has not settled, and the question of some complication arose.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 11th	—	—	—	12680

Exploratory puncture made; pus was found. Small empyema opened the same evening.

28th	—	—	—	14680

Still discharging. Sent to the Jaffray Hospital. Died early in August. Autopsy revealed a small empyema and abscess of lung.

47.—M. P., æt. 45, female. Admitted to hospital in practically a moribund condition. It was probably a post-pneumonic empyema.

Aug. 28th Thirty-five ounces of pus drawn off by aspirator.

	Temp.	Pulse.	Resp.	Leucocytes. per c.m.
29th	100·4	158	56	50000

Pleural cavity freely opened and drained on the evening of this day.

30th	100·2	160	64	26640
31st	101	150	56	33120
Sept. 1st	100·6	148	56	34800
2nd	100	144	56	34000
3rd	100·6	128	48	16800
4th	100·6	140	58	19360
6th	100 2	156	48	32160

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 8th	100·4	148	56	13440
11th	100·4	132	44	12480
17th	100	130	32	6240
27th	101·2	76	40	11840
Oct. 9th	98·6	108	36	10240

There is still a little discharge, though the patient is up and walking about.

This case was admitted to hospital apparently *in extremis.* The leucocyte count, though taken after thirty-five ounces of pus had been withdrawn, was very high. Her recovery was slow and gradual, and the leucocytosis, though somewhat fluctuating in amount steadily decreased until the last few weeks, when it remained at a slightly plus value, due no doubt to the still existing discharge.

48.—A. C., æt. 32, female. Admitted with the physical signs of fluid in the right pleural cavity.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 23rd	—	—	—	15280

By exploring syringe, turbid serum was withdrawn, which contained pus cells and gave a pure growth of streptococcus pyogenes.

Oct. 26th	—	—	—	29680

Differential count :—

	Per cent.
Polynuclear finely granular oxyphiles	96.4
Small lymphocytes	2
Large lymphocytes	1·6

Oct. 27th	—	—	—	30360
Nov. 1st	—	—	—	26160

4th The pleural cavity was freely opened upon this day and drained.

7th	—	—	—	13120
13th	—	—	—	12800

The wound is still discharging freely. On October 23rd, the the pleural effusion consisted of turbid serum, whereas on November 4th, when evacuated, it was composed of thin yellow pus.

49.—R. F., æt. 20, female. Empyema following pneumonia.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 25th	101	130	70	42800
28th	100	100	60	34160

Operation same evening; forty-two ounces of pus were evacuated from pleural cavity.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 31st	99·4	125	50	10520
June 2nd	99·4	112	44	11680
6th	98·6	108	36	12480
11th	98·6	100	34	11680
18th	98	100	32	11520

Sent to the Jaffray Hospital; still discharging slightly.

There was a very pronounced leucocytosis in this case, which all but disappeared after the evacuation of the pus.

50.—P.G., æt. 3, male. The child was convalescing from an attack of broncho-pneumonia; the temperature was normal, yet the child looked very pale, and did not progress as satisfactorily as it ought to have done. The physician, who proposed to discharge the patient on August 31st, asked me to examine its leucocytes.

	Temp.	Pulse.	Resp.	Leucocytes. per c.m.
Aug. 31st	98·4	108	27	15600

A careful examination of the chest revealed a dull area at the base of one lung. On exploring, pus was found, and in the evening was evacuated freely.

	Temp.	Pulse.	Resp.	Leucocytes. per c.m.
Sept. 3rd	98	104	44	14080

No more blood examinations were made.

SEROUS PLEURISY.

51.—W. K., æt. 38, male. Pleurisy with effusion.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 14th	100·8	108	32	5280
15th	101	108	32	10240
22nd	100·8	84	24	8080
24th	100	92	24	6080

Recovery.

52.—H. E., æt. 13, male. Pleurisy with effusion. Clear fluid withdrawn.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 14th	103	120	36	6800
15th	103	120	36	5600

Recovery.

53.—A. N., æt. 11, female. Pleurisy with effusion. Clear fluid withdrawn.

	Temp.	Pulse.	Resp.	Leucocytes. per c.m.
Oct. 24th	—	—	—	4960

54.—H. F., æt. 48, male. Pleurisy with effusion. Large quantity of clear fluid withdrawn.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 6th	99·6	96	20	5440

CONCLUSIONS.

Suppurative pleurisy produces a very definite leucocytosis of the polynuclear finely granular variety.

On evacuation the leucocytosis does not disappear with the same rapidity as we have noticed after the drainage of other abscess formations. In none of my eight cases did the white corpuscles reach their normal standard after the pleural cavity was freely opened. This is due largely to the great difficulty experienced in effectively draining such a peculiar collection of pus. There is practically always a certain amount of undrained matter, and this continues until the whole pleural space is obliterated.

Then in many of those post-pneumonic empyemas there is associated with it a retarded resolution, which is of itself sufficient to maintain a high leucocyte numeral. Lastly, it is probable that suppurative inflammations, involving or adjacent to the lung, tend to produce a higher general leucocytosis than similar inflammations elsewhere, which is in keeping with the extensive local leucocytic emigration of this highly vascular organ.

Gross accumulations of pus after evacuation of purulent pleurisy would, in all probability, be detected by regular blood examinations. After the crisis of pneumonia, the leucocytes usually fall to their normal standard in the course of a day or two. Should this not occur, it suggests the possibility of such complications as empyema, lung abscess, gangrene, or retarded resolution. A careful examination of the chest will satisfy the physician whether this suspicion is correct or not, and the matter will be placed beyond a doubt by the judicious use of an exploring syringe.

In none of my four cases of serous pleurisy, which are inserted for the sake of comparison, did I obtain any increase of the white blood corpuscles. This forms a very striking contrast to that of serous peritonitis. It also suggests the possibility that a blood examination would be of value in differentiating serous from purulent pleurisy.

In reviewing this limited number of leucocyte records bearing upon the subject of suppuration, there are several general impressions left upon one's mind. Pent-up suppuration of the usual pyogenic character is almost constantly associated with a leucocytosis. Not only is there a great increase of the white blood corpuscles at the seat of the inflammation which act as the first line of defence, but also there is a pronounced increase of the circulating leucocytes which act as the reserve force, upon which further demand may be made. The local leucocytosis or first line of defence cannot easily be determined, but the general leucocytosis or reserve force can be accurately measured without the least difficulty. And we find that this general leucocytic increase follows so closely the precise progress of the local suppuration, that its regular estimation furnishes an important clinical guide in the study of this common surgical malady. It would be foolish to advocate leucocyte estimation in all cases of suppuration, such is entirely unnecessary. Yet in many deep suppurations, especially those associated with abdominal organs, the labour entailed by regular blood examinations would be amply repaid. In obscure conditions, the leucocyte record might suggest a clue to its complete elucidation, it might settle the diagnoses, and it would frequently obviate that fatal error of labelling obscure cases associated with elevated temperature as "tubercular."

More than one of the above-mentioned cases with vague and obscure symptoms were regarded as tuberculous and beyond the pale of surgical resource. An important diagnosis is sometimes suggested to the clinician by a very insignificant physical condition. The clinician who despises detailed and exhaustive physical examination, who trusts largely to that admirable faculty, "clinical instinct," must frequently find himself very far afield in diagnosis. I would unhesitatingly advise a more frequent use of the Thoma Zeiss hæmocytometer in surgical practice, and I have sufficient confidence in the consistency of leucocytic reaction to say that it has few rivals in the faithfulness with which it reflects the progress of local suppuration.

REPORTS OF CASES.

A CASE OF PRIMARY PNEUMOCOCCUS MENINGITIS SIMULATING PUERPERAL ECLAMPSIA.

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Pneumococcus Meningitis in the absence of inflammation of the lungs is not a common affection, and its occurrence in the later months of pregnancy is, it may be presumed, of extreme rarity. Eclampsia on the other hand is relatively common, occurring according to different statistics with a frequency varying from 2 in 1000 to 6 in 1000 cases of pregnancy. As a general rule Eclampsia presents a collection of phenomena that makes it tolerably easy to recognise. The sudden onset of epileptiform convulsions, with or without clear prodromal symptoms, in a pregnant, parturient, or puerperal woman immediately gives rise to suspicion; the repetition of convulsions associated with coma more or less marked and persistent, and the observation that the urine is diminished in quantity and contains a notable amount of albumen converts the suspicion almost into certainty. The diagnosis from hysterical convulsions is as a rule readily made by observing the character of the convulsions and of the attendant symptoms. From ordinary epilepsy the distinction is made by a reference to the patient's history and to the condition of the urine. Convulsions due to meningitis may be differentiated from eclampsia by the history of the affection, the presence of hemiplegia or other paralyses, and by the fact that the urine is not diminished in quantity and does not contain albumen. The following case shows the insuperable difficulties that may sometimes be met with in the present state of our knowledge in making a correct diagnosis during life between eclampsia and meningitis. In a woman in the seventh month of pregnancy the onset of severe and continuous headache; the occurrence of coma and epileptiform convulsions five days later; the co-existence of albuminuria; and the rapid termination in death; all these taken together, appeared to make the diagnosis of eclampsia certain.

The patient R. S., a married woman aged 35, was admitted to the General Hospital, Birmingham, under the care of Dr Thomas Wilson at 4.25 p.m. on April 5th, 1901, with the diagnosis of eclampsia of pregnancy. On admission the patient was comatose and cold, the pulse 140 to the minute and very small, respirations 38, and temperature 100·8F. After being put to bed the extremities gradually became warm; but pallor turned to cyanosis, the respirations became slower and slower, and 1½ hours after admission the woman died, never having recovered consciousness. Rapid examination showed that the patient was a multipara between 6 and 7 months pregnant. The heart and lungs showed no abnormal physical signs and there was no œdema. Urine drawn off by the catheter was of acid reaction and specific gravity 1032; it contained a cloud of albumen and 1·5 per cent of sugar. Microscopic examination failed to reveal casts or blood corpuscles.

The following history was obtained from the patient's aunt:—The woman had had 7 children, all born by natural labours, all healthy except the second who was an idiot; she was not known to have suffered from any previous kidney trouble. At the time of admission she was supposed to have been about 6 months pregnant and she had been quite well until March 31st, 5 days before admission, when she began to complain of severe headache and of not feeling well. The headache gradually became worse and on the morning of April 4th a doctor was called in for the first time. On the following day, April 5th, the patient was found unconscious in her bedroom and passed through a succession of fits in which the arms and legs twitched, and the face was drawn to the right; urine and fæces were voided during the attacks. The convulsions continued incessantly until the patient was put under the influence of chloroform. The medical man who was called in found albumen in the urine and made the diagnosis of puerperal eclampsia. There was no illness of any kind in the house.

Post mortem examination showed that death was due to a purulent meningitis occurring in a pregnant woman; that the meningitis was caused by the pneumococcus; and that there was no disease of the lungs or kidneys. The body was well developed and well nourished; there was no œdema or glandular enlargement. The pregnant uterus extended as high as an inch above the umbilicus; it contained a healthy fœtus of about 6½ months development, 29 ounces in weight, and 13 inches in length. The placenta, placed anteriorly and to the left, was normal in appearance, and so were both ovaries and Fallopian tubes. There was no pericarditis, pleurisy or peritonitis. The heart weighed 11 ounces and showed slight hypertrophy of the left ventricle, but was otherwise healthy. The right lung weighed 19, and the left 15 ounces; in each the upper lobe was œdematous and the lower lobe congested and œdematous. Œsophagus, stomach and intestines were all healthy; the liver, large and fatty, weighed 80 ounces; the spleen was large and diffluent and weighed 12 ounces; the pancreas and suprarenals were normal. The kidneys, each weighing 5½ ounces, were very congested but otherwise appeared quite healthy; the ureters, bladder and urethra showed no abnormal appearances.

The brain was small, weighing 41 ounces; its surface was covered by a dense layer of yellowish creamy pus, which completely invested the whole cerebrum, vertex as well as base, the cerebellum, the pons and the medulla. On section neither the grey nor the white matter showed any naked-eye changes; the ventricles were not unduly distended; there were no signs of tubercle, middle-ear disease, or pneumonia; nor was there any septic focus.

A stained film made from the purulent exudate on the meninges showed among the pus cells numerous diplococci, here and there joined to form short chains of two or three pairs; the individual cocci were pointed, their long axes being from end to end; they were encapsuled and retained Gram's stain. A stroke culture on agar after 24 hours incubation at 36° C. showed a nearly transparent film consisting of minute spherical colonies very closely set in the centre of the film but more discrete at the edges. The colonies were found to be composed of diplococci having the same characters and giving the same staining reaction as those seen in the preparation of the pus. The diplococci found both in the stained film and in the culture resembled in size and shape Fraenkel's pneumococcus.

REMARKS.

This case emphasises the importance of making an autopsy complete and especially of never omitting the examination of the brain in any case where cerebral symptoms have been present during life. It would have been easy for a hasty and incomplete examination to have led to the conclusion that here had been a case of eclampsia. There is, so to speak, no constant morbid anatomy for the affection. The changes that are most commonly found affect the kidneys, but in some cases even the most careful examination fails to discover any lesion of these organs, while in many others the changes are insignificant. As a matter of fact, eclampsia is accompanied or caused by a sudden break-down of kidney function, and this may take place in organs that have apparently been previously healthy, or in those that have long been known to be organically diseased. The slightness of the renal affection that was found after death in this case. would therefore have presented no difficulty in accepting the diagnosis of eclampsia.

The relation of the presence of sugar observed in the urine obtained just before death is obscure. Was the glycosuria an independent co-existing affection? Was it caused by the meningitis? Or was it an example of the glycosuria sometimes found in the later months of pregnancy? The glycosuria occasionally found in pregnancy is due to absorption of sugar from the breasts and is usually in small quantity. The notable amount found in the present case was, in all likelihood, dependent upon the meningitis and connected in some way with the enlarged and fatty liver. What stress, if any, should have been laid upon the observation of such a degree of glycosuria I am unable to say, and this is a point that deserves attention in future observations.

Finally, an important principle of special interest from the obstetrical point of view is illustrated by this case. If any particular form of treatment, as for instance by saline infusion or by morphia had been undertaken and if no autopsy had been made, the failure of the measures undertaken might seriously have shaken one's confidence in their utility. Too much importance, therefore, must never be attached to conclusions as to the futility of any form of treatment based upon cases of the affection in which no post mortem examination has been made.

SURGICAL ABSTRACTS.

ORTHOPÆDIC SURGERY.

BY W. DUNCAN LAWRIE, M.D., F.R.C.S.E.

ARTHRODESIS OF THE SHOULDER JOINT IN INFANTILE PARALYSIS.

L'Arthrodèse Scapulo-Humérale dans le traitement de la luxation paralytique de l'épaule, par le Dr. Bothezat, *Revue de Chirurgie*, 10th May, 10th June, and 10th July, 1901.

Arthrodesis was first performed by Prof. Albert of Vienna, in 1878, on the knee of a child, suffering from paralysis, and has since been applied to all the large joints of the body. It has been most frequently performed on the lower extremity (103 out of 110 recorded cases) and Dr. Bothezat has only been able to find records of six cases in which it has been performed on the shoulder joint. Two were done by Albert, one in 1879 on a girl with paralysis, the other in 1881, for recurrent dislocation.

Wolff of Berlin, and Karewsky have each also reported two cases.

The basis of Dr. Bothezat's paper is three of these cases and three of his own.

When all the muscles of an articulation are paralysed, the joint is relaxed by stretching of its capsule, and permits of passive movement to such an extent as to simulate true dislocation. On inspection of a shoulder so affected it is found to be smaller, more flattened and more elevated than the sound shoulder. Diminution of size is due to atrophy of all the elements of the joint; the raised position to contraction of the trapezius, which is never completely paralysed, the upper segment being innervated by the spinal accessory nerve. On account of the atrophy of the soft parts, the bony points of the shoulder are more prominent, and the capsule of the paralysed joint is so lax that the head of the humerus can be displaced in all directions, upwards to the acromion process, downwards and inwards to the coracoid process, backwards and outwards as far as the posterior border of the glenoid cavity.

With the arm parallel to the chest, the head of the humerus is usually dislocated forwards and inwards. On opening such a joint, the ligaments are found stretched and thinned, the capsule is lax, the glenoid cavity is reduced in size, the tuberosities are hardly visible, the bicipital groove is shallow, and the tendon of the biceps, in cases where the biceps is atrophied, is represented by a thread-like band.

There are two important divisions of paralysed shoulder joints. In the first, the paralysis of the muscles of the articulation is associated with paralysis of the scapular muscles; in the second, the scapular muscles are sound, and the other muscles completely paralysed.

The first class is not amenable to surgical treatment. Clinically, the second class is met with in the following forms:—

(*a*). The paralysis is localised in the deltoid alone, or, more frequently, in the deltoid, the supra-spinatus and the external rotators, the infra-spinatus, and teres minor. When the deltoid is alone paralysed, the patient cannot abduct, flex, or extend the arm. The only movement possible is obtained by contraction of the trapezius, which pulls up the shoulder and so tilts out the arm.

When the external rotators are paralysed as well as the deltoid, the arm is fixed in a position of adduction and internal rotation, and, owing to paralysis of the infra-spinatus, the patient cannot execute the lateral movement of the hand by which, in writing, the pen is carried from left to right across the page.

(*b*). The paralysis is localised in the deltoid, the external rotators, and the triceps.

(*c*). The paralysis affects, in addition to the deltoid and the external rotators, all the muscles of the upper arm, both flexors and extensors, and some of the muscles of the fore-arm, the supinator longus most frequently, the extensors more rarely. Flexion and extension of the fore-arm are lost, the fore-arm is pronated, supination is effected with difficulty, and the hand is flexed.

(*d*). The paralysis is total. All the muscles of the upper extremity are affected. The arm hangs a dead weight at the side, and the patient often fastens it to his belt to keep it out of his way.

(*e*). Paralysis similar to the last, but affecting both arms.

Two methods of treatment have been proposed for this condition: (*a*) by apparatus, (*b*) by operation.

Apparatus is contra-indicated in most cases for the following reasons: (1) It is too complicated, expensive and difficult to apply and keep in good order; (2) It tends to produce lesions of the skin owing to the trophic disorder of the skin; (3) The apparatus prevents the action not only of the paralysed muscles whose action they replace, but also that of neighbouring groups of sound muscles.

The object of arthrodesis is to obtain anchylosis of the shoulder joint, so that the movement of the scapula may be transmitted to the humerus. The paralysed muscles are sacrificed and replaced by the sound healthy scapular muscles, and these by the intermediary of the scapula move the humerus. The scapula is moved in the following ways: (1) It may be made to change its *situation* on the thorax in a vertical or horizontal direction. (2) It may be made to change its *position* by movements of rotation round its own axes. The most important of these movements is that of rotation on its antero-posterior axis. A diagram not referred to by Dr. Bothezat illustrates this, and Professor Arthur Thompson of Oxford has very kindly allowed its use in this article. It is taken from his Handbook on Anatomy (Second edition; Oxford, Clarendon Press, 1889, p. 96).

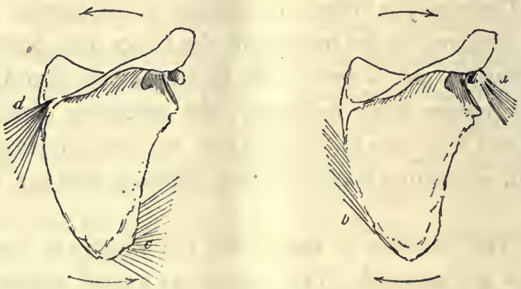

Diagram showing how rotation of the scapula is effected. *a.* Pectoralis minor muscle. *b.* Rhomboideus major. The combined action of these muscles will cause rotation in the direction indicated by the arrows.

c. The fibres of the serratus magnus attached to the inferior angle of scapula. *d.* The lower fibres of trapezius passing up over root of spine. In combination, these portions of the muscles will cause the bone to rotate in the direction of the arrows.

The lower fibres of the trapezius and serratus magnus abduct the anchylosed humerus; the rhomboideus major and the pectoralis minor adduct it.

The success of the operation will depend upon the solidity of the anchylosis and the strength of the muscles of the scapula; the relative position of the bones regulates the direction of the movement.

The indications for arthrodesis are as follows: (1) The muscular paralysis, which is the cause of the luxation, must be a permanent one, and incurable by medical treatment. (2) The paralysis should be so localised that the muscles of the scapula, elbow and hand are absolutely normal.

The central lesion which produces the paralysis may take any of the following courses. (1) It may affect the cells of the anterior horn temporally without destroying them, and completely clear up. The electrical contractility of the muscles is very little, if at all, modified, and the paralysis is cured quickly. (2) It may produce a more profound lesion, but all the nerve cells may not be destroyed. The Faradic contractility is completely suppressed, and galvanism shows the reaction of degeneration. These paralyses are curable by a prolonged treatment. (4) The lesion may go on to sclerosis, completely destroying the cells in the anterior horn; the resulting degeneration of nerves and muscles will be permanent. Electrical examination gives an absolutely negative result. These forms are incurable.

When the muscle fibres are destroyed and replaced by fatty tissue, no medical treatment will cause their regeneration. Duchenne, however, considers that, even when all trace of contractility has disappeared, there may be healthy muscular fibres embedded in the fat and so surrounded by it that no contraction is visible on electrical examination.

The following should be estimated before deciding that the paralysis is incurable. (1) The result of electrical exploration and the duration of the paralysis. If it is found that there is complete loss of electrical contractility and a history of three years' duration, the paralysis may be considered permanent. (2) The result of medical treatment. When the duration of the paralysis is known, treatment need not be prolonged beyond three or four months. If the duration is not known, it is necessary to submit the case to a longer treatment, never less than six months.

The ideal would be that all the scapular muscles should be normal, but arthrodesis may be usefully performed when one or more of these are paralysed. The most important movement is abduction, and as a sound serratus magnus is necessary for the movement, this muscle must be very carefully examined prior to operation It is very often paralysed with the deltoid.

Further, the scapular articulations must be normal, *i.e.*, the acromio-clavicular and the coraco-clavicular, by which the scapula directly articulates with the clavicle, and the sterno-clavicular, which indirectly connects the scapula to the sternum, and plays a very important part in the movements of the shoulder after arthrodesis. The laxity, which is produced in the latter articulation six months to one year after arthrodesis, is the best proof of the importance, which the sterno-clavicular articulation has on the movements of the scapula.

If the condition is complicated by paralysis of the elbow-joint a subsequent arthrodesis of the elbow-joint may be done.

Technique of Arthrodesis.—The author recommends the anterior incision, but begins a little higher up than usual, a little inside the acromio-clavicular articulation, and prolongs it downwards and forwards in the interval between the pectoralis major and deltoid for ten centimetres. The capsule is incised in the bicipital groove, and the coraco-acromial ligament divided. As much of the synovial membrane is scraped away as possible. The head of the humerus is brought out of the incision, the tendon of the biceps being raised with an elevator, and if the muscles inserted into the tuberosities are in the way their insertions are divided. The cartilage is then stripped off the head of the humerus. The glenoid cavity is more difficult to deal with. It may be necessary to make more room by dividing the capsule transversely, and the cartilage is stripped off, and also the glenoid ligament as much as possible. The head is then fixed in internal rotation, with the arm at an angle of 45° with the axillary border of the scapula. Two silver sutures are inserted, one between the head of the humerus and the upper border of the glenoid cavity, and the other between the head of the humerus and the acromion process. The capsule is stitched up, a piece being resected if it be too lax. The arm is immobilised by a plaster bandage. The wound is dressed in ten days, the superficial sutures removed, and the plaster bandages re-applied for from fifty to sixty days. During this period massage and electricity are applied to the scapular muscles as far as possible. If anchylosis is then solid, the bandage is dispensed with and movements are begun—passive at first, and later, active. Massage and electricity are continued until the movements are free.

The results in the author's three cases appear excellent. The patient is able to carry the hand to the mouth, brush the hair, button the dress, play at ball, etc., and the author thinks that this restoration of movement in a paralysed limb, can with justice be compared to the results obtained by the suture of a divided nerve.

REPORTS OF SOCIETIES.

Midland Medical Society.

The Seventh Meeting was held on Wednesday Evening, February 19th, 1902, at the Medical Institute, the President, Mr. Arthur Oakes, being in the chair.

Messrs. David Buchan, M.B., C.M., D.P.H., and H. St. Clair Roberts, M.R.C.S., L.R.C.P., were elected members of the Society.

Angioma of the Globe.—Dr. Martin Young showed this case. The patient was a child, æt. 14. Two and a half years ago the right eye presented a leash of deep coloured vessels on the nasal side of the cornea under the conjunctiva. The nasal half of the retina was detached and very black. Vision $= \frac{5}{5}$. The condition was diagnosed as one of melanotic sarcoma and excision was advised, but the parents refused their consent.

At the present time there was externally a large vascular dark blue mass on the nasal side of the eyeball. The pupil was crescentic, the iris being pushed over towards the temporal side: it could not be dilated with atropine, in consequence of a vascular tongue creeping outwards in the anterior chamber and restricting the movements. There was only light perception. The patient had suffered no pain at any time. The left eye was normal. A small and very painful tumour, the size of a hazel nut, had appeared eight months ago on the back of the left thigh. It had been excised and examined by Prof. Leith, whose report is appended below. Three months ago a small tumour, about the same size, developed just outside the area of the axillary glands; but this had never given rise to any pain.

The long history was held to negative the diagnosis of sarcoma, and the condition was thought to be one of nævus of the choroid. The two small tumours were probably entirely unrelated to the eye condition. There was no history of tuberculosis in the family. The child was well in other respects.

Prof. Leith reported that the tumour examined by him was entirely encapsulated, and showed bands of well-formed fibrous tissue penetrating the substance in every direction, and dividing it into a number of areas like a sponge. These areas were filled with a substance showing an apparently entirely cellular structure, the cells being spindle-shaped and round. The complete fibrous capsule suggested that the tumour was simple, while its apparently entirely cellular character within the above-mentioned areas suggested sarcoma.

Mooren's Ulcer of the Cornea.—Mr. Jameson Evans showed this case. The patient, a woman, æt. 49, came under his care in March, 1901. She was then suffering from marginal ulceration of the cornea in each eye, the right being slightly the worse. As the ulcers resisted all the usual topical and constitutional remedies, it became necessary to cauterise them. At the end of two months, and after three cauterisations, the right eye was completely cured, except for a diffuse marginal opacity of the cornea. The left eye, though subjected to varying treatment, including periodical cauterisations, had steadily, though somewhat slowly, progressed, until only a central piece of cornea about the size of the pupil was left uninvolved. The ulceration was at first confined to the upper half of the corneal limbus, but it gradually extended completely round, and then worked inwards more or less concentrically. The ulcer was limited by a grey infiltrated margin, which was distinctly undermined at certain parts. The central clear cornea became cloudy and infiltrated occasionally, and the eye then became functionally useless. The scar tissue left in the course of the ulcer was vascularised, but its vitality was very low, and it periodically broke down into ulcers. These completely healed over at times for periods of from two to six weeks, and then the disease would break out again and progress as vigorously as ever.

Myoma of Uterus removed by supra-vaginal hysterectomy.—Mr. J. Furneaux Jordan showed this specimen. The patient, æt. 40, had been married 14 years. She had had no children and no miscarriages. Menstruation had been regular and the quantity not excessive. Six months ago she had noticed a lump in the abdomen which had rapidly increased in size. In the two months during which she had been under observation, the increase in size had been most marked. For some few weeks pain had been severe, and there had also been bearing down in the pelvis. The specimen was a multinodular myoma. One large nodule on the right side invaded the whole of the broad ligament, and, lifting the peritoneum from part of the iliac fossa, lay right underneath the cæcum and vermiform appendix. A second sub-peritoneal nodule occupied the true pelvis, and on the left side a third one invaded the left broad ligament, but not to the same extent as on the right side. The tumour was removed by Kelly's method, the broad ligament tumours being enucleated, one from above down, and the other from below up. The cervix was divided at the level of the internal os. The operation was done on January 15th of this year, and the recovery had been good except for the formation of a stitch abscess about the eleventh day.

Paper.—Dr. Edge read a paper on "The Treatment of Abortion."

The Eighth Ordinary Meeting was held on Wednesday, March 5th, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the Chair.

Mr. Wm. Garbutt, M.B., Edin., was elected a member of the Society.

Strangulated Hernia through a slit in the Great Omentum.—Mr. Barling showed a woman, æt. 42, upon whom he had operated for this condition three weeks previously. The patient was admitted to hospital four days after her symptoms began, the first symptom being pain in the lower part of the abdomen, chiefly in the left iliac and hypogastric regions, coming on when the patient was in bed. The symptoms were moderate vomiting, almost but not absolute obstruction and a gradually increasing distension of what appeared to be a huge coil of intestine running transversely across the lower part of the abdomen, leading to a diagnosis of volvulus. At the operation an incision in the middle line revealed an enormous distended coil of large intestine. This had to be emptied before it could be dislocated, and then it was found that about four inches of the ileum, the cæcum, the ascending colon, and a portion of the transverse had become herniated through a slit in the great omentum. A good recovery followed the operation.

Chronic Intestinal Obstruction from a broad band of Adhesion following Herniotomy for a Strangulated Femoral Hernia.—Mr. Barling also showed a man, æt. 55, who came under his care with symptoms indicating chronic obstruction of the small intestine, namely attack of pain with powerful peristalsis of the small intestine which could be both seen and felt, and occasional vomiting. These symptoms followed herniotomy for a right femoral hernia five months previously. On opening the abdomen in the middle line a strong band of adhesion was found attached at one end to the region of the femoral orifice, and at the other end to the small intestine, a few inches from the ileo-cæcal valve, and the intestine here was densely thickened and much narrowed, and the bowel above very much dilated. The obstruction was overcome by a lateral anastomosis between the ileum, eight inches from the ileo-cæcal valve, and the cæcum by means of a Murphy button an inch and a quarter in diameter. A good recovery followed.

An Apparatus for obtaining a modified Trendelenburg position.—Mr. Christopher Martin showed an apparatus for obtaining the raised pelvic position in abdominal operations. It consisted of an enamelled iron frame (eight inches high, three feet long, and twenty inches broad,) which is placed on the ordinary operating table. The upper end sloped obliquely downwards at an angle of 45°. The patient was placed with the buttocks and legs resting horizontally on the frame, and the lumbar and lower dorsal region of the body on the sloping end of the same. The chest, shoulders, and head of the patient lay horizontally on the operating table. The result was that the pelvis was raised about eight inches above the level of the chest, the spine was in a position of acute lordosis, and the abdomen was inclined at an angle of about 45°. Mr. Martin had used this position for several months in performing abdominal sections, and had found it most useful. It was in his opinion an improvement on the ordinary Trendelenburg position. The frame was made for him by Mr. Ash, Edmund street, Birmingham.

Dermoid Cyst of the Ovary.—Mr. J. Furneaux Jordan showed this specimen. The patient, æt. 29, had had one child three years previously. Labour was normal. When seen on Feb. 12th, three weeks ago, she had been five hours in labour; the membranes had ruptured and the waters drained away. All attempts at delivery had failed. On examination it was found that the head was jammed behind the top of the pubes, while behind and below it there was a firm, smooth, tense, elastic swelling, which could not be moved, and which appeared to be an ovarian cyst. If the cervix could have been pulled down so as to bring the posterior fornix within reach, it would probably have been easy to remove it by posterior vaginal cœliotomy; but it was absolutely impossible to do this. The abdomen was opened and the child removed by Cæsarean section; unfortunately just too late to save the life of the child. It was only then that the cyst could be reached. This was found to be about the size of a cocoa-nut, densely adherent everywhere and dermoid in character. It was removed. The appendages of the other side—the right—were healthy and were not touched. The incision in the uterus was sewn up with silk. The patient made an excellent recovery.

Soft Fibro-Myoma of the Uterus.—Dr. Purslow showed a fibromyoma which he had removed by abdominal hysterectomy, at the Queen's Hospital. The patient, æt. 55, had not menstruated for nine years. The tumour had been noticed for a few months only, and was undoubtedly growing. It gave a very distinct sense of fluctuation, and was considered to to be an ovarian cystoma before the abdomen was opened. The specimen weighed three pounds. The fibroid was found to be growing in the posterior wall of the uterus, and the cavity of the latter was unaltered in size. A histological examination was made by Dr. Stanley, pathologist to the hospital, and he reported that the growth was a fibro-myoma. The patient made a good recovery.

Dr. Purslow drew attention to the rare occurrence of continued growth in a fibroid so long after the climacteric.

Mr. George Heaton read a paper on "The Treatment of Appendicitis."

The Ninth Meeting of the Session was held on Wednesday evening, March 19th, 1902, the President, Mr OAKES, being in the chair.

The following officers were nominated for election:—As *President*, Mr. Langley Browne; as *Treasurer*, Mr. J. Garner; as *Secretaries*, Mr. Christopher Martin and Dr. Stanley.

Interstitial Keratitis due to Acquired Syphilis.—Mr. Jameson Evans showed a woman, æt. 59, who had been under his care since the end of January, 1902. She was suffering from a typical diffuse keratitis over the lower half of the right cornea. At one part it was infiltrated with fine vessels forming a distinct "salmon-patch." The anterior chamber was shallow, but in view of the diminished tension and a tendency to iritis, the patient was given atropine to drop in the eye night and morning. This with potass. iodid. and mercury internally were the only means of treatment adopted at the time, but during the more acute stage she had been having hot fomentations as well. She was making satisfactory progress towards recovery under this treatment. Her family history was interesting. She had had six children and two miscarriages. Two of the children had suffered from eye troubles, one of these, a girl æt. 22, was shown at the meeting. She showed corneal nebulæ, the result of interstitial keratitis for which she had been under treatment at the Eye hospital eight years ago She had marked Hutchinson's teeth and was deaf.

Paper Bag for Clover's Inhaler.—Dr. McCardie showed Rickard Lloyd's Paper Bag for Clover's Inhaler. The advantages claimed for this bag are—that being cheap it can be burned after being used once, and therefore, a clean one is used for every case; lightness; and that unlike the rubber bag it will keep in any climate. On trial, it was found that the paper crackled in an annoying way during respiration, and that the stiffly projecting paper is somewhat in the way during operations on the neck and upper part of the trunk. For septic cancerous, tubercular, or foul-mouthed patients' the paper bag would be very useful.

Papilloma of Kidney.—Mr. Gamgee showed a kidney, the pelvis of which was completely filled by a villous papilloma. The patient was a man, æt. 50, who had suffered from attacks of profuse hæmaturia for eight years. The kidney was removed by the lumbar route, and the patient made a good recovery.

Mr. Milward read a paper on "Localised intra-peritoneal suppuration and its treatment by drainage," which was illustrated by a series of wax casts of the various intra-peritoneal spaces. Dr. McCardie also read a paper on "A case of faintness," and another of "Vomiting after operation under ethyl chloride narcosis."

REVIEWS.

THE MEDICAL TREATMENT OF GALL-STONES.*

We have read this book with considerable pleasure. Its title, however, might with advantage be altered, for it deals with the subject of gall-stones in general, though undoubtedly the question of treatment is kept specially in view throughout. The book owes much of its clinical value to the fact that Dr. Keay has himself suffered severely from gall-stones, and his description of their symptoms and effects is particularly interesting and instructive for that reason.

The main purpose of the book, as expressed in its too restricted title, is to protest against the present tendency to resort to operation as soon as the existence of gall-stones has been diagnosed, and to show that in the majority of cases more permanent good can be obtained from judicious medical treatment. Dr. Keay is of opinion that the mortality of the disorder has been considerably increased by the surgical energy of the present day, though of course he does not deny that many cases are met with in which it is necessary to recommend operative interference.

The lines of treatment which the author advocates are based upon the ideas that the formation of gall-stones is largely due to abnormal conditions of the bile, brought about by unhealthy intestinal processes as well as by stagnation, and that even the symptoms of the disorder are to no small extent dependent upon the same abnormal state of the secretion. Indeed he is of opinion that, in the presence of healthy bile and the absence of inflammatory conditions of the gall-bladder and ducts, the mere existence of stones in the bile passages is unlikely to give rise to symptoms. The treatment which he recommends is therefore directed first of all to the prevention of stagnation, and the usual advice is given with regard to tight-lacing, sedentary habits, &c. Further, Dr. Keay attaches especial importance to increasing the flow of bile, for the purpose both of obviating any tendency to stagnation and of washing away harmful and inflammtory materials. With this object he advocates the eating of hearty and frequent meals, on the ground that the presence of food in the stomach and duodenum is known to give rise to an increased discharge of bile. He also believes in the efficacy of water, and advocates the drinking of hot water two hours after meals, and also the administration every two or three days of a large warm water rectal injection. Calomel and salines are, in his opinion, of material value. Finally the writer is a firm believer in the effects of hard work and anxiety in bringing on attacks of gall-stone colic.

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* The Medical Treatment of Gall-Stones. By J. H. Keay, M.A., M.D. London: Rebman, Limited. 1902.

We have in conclusion to express our hearty approval of Dr. Keay's protest against the light-hearted administration of morphia in cases of biliary colic, and, we would add, for the relief of other painful conditions. Dr. Keay rightly says, "When a patient is entrusted with a hypodermic syringe he may sleep soundly enough, but I do not think that there ought to be sound sleep for the medical man who has entrusted him with it." There is every need for some such protest against the free use of morphia, for our own experience has brought us in contact with not a few cases of permanent morphinism due originally to medical administration. Dr. Keay states that he has known the struggle to break off the habit to be "fearful" in the case of a strong-minded man who had used injections only for a week, and he gives a graphic description of his own sufferings in breaking himself of the morphia habit, even after very moderate indulgence in the drug. For the sake of this part of the book alone, we trust that it will be widely read.

A SYSTEM OF PHYSIOLOGICAL THERAPEUTICS.*

THESE are the third and fourth volumes of the series on Physiological Therapeutics referred to in our issue of December, 1901, when the earlier volumes were reviewed. Dr. Parkes Weber has modelled his books on the writings of his father, Sir H. Weber, and has done his work extremely well. There is an enormous amount of information in these volumes and it has the advantage of being presented in a concise and well-written style. We are especially glad to see that Dr. Weber and his collaborator have resisted the temptation to be discursive, and have refrained from padding their work with wordy descriptions of the natural beauties, or defects, of the various health resorts mentioned. What the medical practitioner wants to know, is the place which from a climatic point of view will suit the particular patient under treatment. The natural beauties and historical associations, although not without value, occupy a secondary position in the information which is to guide him in his selection. That information we think he will find in a most readable form in these volumes.

Part I. deals with the physics, physiology, and general therapeutics of climate. In this division, climate, the special effects of atmosphere, altitude, soil, etc., are discussed. The maps showing mean annual isotherms, temperatures, rainfalls, etc., are clear and well printed.

Part II., which fills the rest of Volume III., and part of Vol. IV. consists of descriptions of health resorts. This part is very well done. The numerous health resorts are divided into groups, and just the right amount of description is given to each. The statements concerning the health resorts of Switzerland, the Engadine, Italy, the Riviera, and some parts of America are accurate, and sensibly put, agreeing very closely with the personal experience of the writer of this article. The maps in this portion of the book are also worthy of special mention.

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* A System of Physiological Therapeutics. Vols. III. and IV. Climatology, Health-Resorts—Mineral Springs. By F. Parkes Weber, M.A., M.D., F.R.C.P. (Lond). With the collaboration for America of Guy Hinsdale, A.M., M.D. London: Rebman Limited. 1901.

Part III. deals with climato-therapeutics, and is divided into two sections. Section I. covers the general management of patients at health resorts, and contains many useful hints on the choice of localities and altitudes. Section II., on special therapeutics, treats of the various diseases separately, and the particular health-resorts where patients suffering from them are likely to derive benefit.

The author has some sensible remarks to make on the subject of the open-air treatment of pulmonary tuberculosis, and we wish he had taken the opportunity to describe more fully the method of carrying it out. There is still great ignorance on this matter amongst both the profession and the laity. The commonly conceived notion that the treatment can be carried out anywhere so long as the patient spends certain hours of the day out-of-doors, provided the weather permits, is quite erroneous. It is necessary not only that the patients should practically live in the open air, but also that the atmosphere should be suitable as well as pure. Something is requisite beyond the actual temperature as shown by the thermometer, beyond the absence of mere impurities in the air: it is the sum-total or quality of the air and surroundings, which we are accustomed to designate somewhat vaguely the "climate," that must be suitable. Dr. Weber would have done good service to point this out more clearly, as it might have helped to clear away a good deal of misconception at present existing on this point. Dr. Solly's statement is perfectly true: "It is not the quantity of the air, or the negative virtue of purity that is alone desirable, but the quality of the air, that is also of supreme importance." This might usefully have been taken for the text of a few paragraphs on a subject which is attracting so much attention just now in the medical and public worlds.

ON DISORDERS OF ASSIMILATION, DIGESTION, Etc.

Some time ago Sir Lauder Brunton published in book form, under the title "Disorders of Digestion," a large number ot scattered papers written or delivered at different times, but all having some bearing upon the subject of which he is well known to be a master. He has now collected a second series of 33 papers on similar subjects. As these were written at different times and for very varying purposes there is necessarily not a little repetition, but the author truly pleads in his preface that such repetition only serves to lay emphasis upon the ideas which have assumed in his mind especial importance.

It would be impossible to read these papers without gaining many and most valuable hints on the causation and treatment of the disorders of digestion and assimilation, and we strongly recommend the book to the notice of practitioners. For our own part, we prefer those sections which are most scientific and least speculative—in other words, those which are written in the least popular strain; but in this many will differ from us. In his clinical lectures and addresses to medical societies, the writer displays a most remarkable ingenuity in suggesting explanations for well-known occurrences, and the endeavour to see into the causes of things and to place medical treatment on a basis of reason is one of the most striking characteristics of Sir Lauder Brunton's published works. Nevertheless, we think that this ingenuity is not infrequently carried too far, as when—to take a single example—he suggests that the good effect of olive oil in the treatment of gall stones may possibly be due to the suggested fact that the oil "makes the bile thicker and makes the stones sit quietly in the gall-bladder." The tendency to such speculations appears to us to be somewhat too freely indulged in, and this is the only fault with which the book can be charged.

The great variety of the papers renders it difficult to single out any for special remark. The longest contribution is that on the

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* On Disorders of Assimilation, Digestion, etc. By Sir Lauder Brunton, M.D., D.Sc., LL.D. (Edin. and Aberd.). F.R.S., F.R.C.P., Physician to St. Bartholomew's Hospital. London : Macmillan and Co., Limited. 1901.

influence of stimulants and narcotics in health, which is reprinted from Messrs. Cassell's "Book of Health," and covers 115 pages. It is a remarkable piece of work, and deals in every conceivable aspect with the influence of alcohol on the human body, as well as with that of other stimulants and narcotics. The remaining papers may roughly be classified as either scientific or clinical. Of the former, we should be inclined to pick out those on the albuminous substances which occur in the urine in albuminuria, on the actions of alcohols and aldehydes on proteid substances, and on the presence of a glycolytic enzyme in muscle, as the most important. The clinical articles are much the more numerous and are most characteristic of the writer. Of the many excellent lectures and addresses, those on abdominal pain, on the use of bromide of potassium and salicylate of sodium in headache, and on some difficulties of diagnosis in hepatic disease, may perhaps be singled out for special mention. But where all are so good, it is not an easy matter ro accord special praise.

A TEXT BOOK OF PHARMACOLOGY.[*]

THE author of this work has produced a book on the action of drugs which is based as far as possible on experimental facts and deductions from these. The importance of an acquaintance with experimental methods in their relation to applied medicine is strongly emphasised throughout, with a view to a more rational basis in the treatment of disease. The treatment of poisoning is also dealt with in the same way.

The work is divided into four parts. Part I is devoted to an outline of the anatomy and chemistry of plants, pharmaceutical methods and preparations, and a useful section on incompatibilities and solubilities. Prescription writing is more fully dealt with, and many useful hints are given. Part II, which comprises the bulk of the book, contains the sections on pharmacology, therapeutics, and materia medica. This again is divided into two sections, the first dealing with drugs whose main action occurs after absorption, the second with those whose main action is local. The drugs are here arranged into groups, distinguished by a few typical actions which vary only quantitatively in the individual members. Neither the chemical composition nor any other one characteristic is taken to determine the groups, but those having most characters in common are placed together in groups, such as the convulsant series, alkaloidal hypnotics, cocain group, irritants, emollients, etc. The sections dealing with dissociation and the ion actions of salts, acids, and alkalies are very clearly explained.

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[*] A Text Book of Pharmacology, including Therapeutics, Materia Medica, Prescription Writing, etc. By Thorald Sollmann, M.D., Assistant Professor of Pharmacology and Materia Medica, Western Reserve University, Cleveland, Ohio. Philadelphia and London: W. B. Saunders and Co.

Each group contains (1) a list of members, (2) a summary of actions, (3) the actions in detail, (4) absorption, fate and excretion, (5) a comparison of the members of the group, (6) toxicology, (7) therapeutical uses, (8) the materia medica of the British and United States Pharmacœias, and other useful non-official preparations.

This method of grouping is a great help to the memory, and serves to bring out forcibly the relations of one drug to another. In many instances the main physiological functions of the organs influenced by the drugs are also shortly yet lucidly described.

Part III contains a series of valuable practical exercises for students, both in chemistry and on animals, with full directions for the carrying out of these. The doses of the more important drugs required by different animals for the demonstration of the effects are also given. The careful performance of such a course of experimental exercises should produce an excellent working basis and solid foundation for the future practical application of remedies, and lead to a rational method of prescribing, and the avoidance of incompatibilities.

Part IV deals with the methods of analysing the causes of pharmacological actions.

Although the book almost throughout reminds one more of a laboratory than the bedside, the clinical aspect of drugs is by no means lost sight of, and there is a vast amount of careful experimental observation in it, which, if utilised more frequently in its clinical bearings, would inevitably lead to less empirical therapeutical treatment. A considerable number of illustrations and diagrams are interspersed throughout the text.

A NEW TEXT-BOOK OF MEDICINE.*

Dr. Syers is certainly to be congratulated on having written a text-book which does not consist in a mere *résumé* of books previously published. He has struck out a somewhat new line, and while giving to the medical public a treatise which is written in a semi-popular style, he shows on nearly every page that he has a thorough practical knowledge of his subject, and having the courage to cast aside hampering tradition, states with no uncertain voice what is knowledge in medicine and what is mere hypothesis. Medical practitioners will be grateful to him for this; but we are not so sure that students will be equally appreciative. This is not a "cram" book by any means, so it may not be attractive to students for this very reason; but equally for this very reason we can strongly recommend it to their notice. Hypothesis holds a dominant position at the present time in much of the writing that appears on medical subjects, and the author's attitude with regard to it may be instanced by quoting his remarks on the causation of ulcers of the stomach and the duodenum. "Many ingenious theories have been elaborated to explain the facts, but none of them are

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* The Theory and Practice of Medicine. By Henry Walter Syers, M.A., M.D. (Cantab.). Senior Physician to Out-Patients to the Great Northern Central Hospital. In 2 Vols. London: Rebman Limited. 1901.

(*sic*) satisfactory." This sentence, with the necessary correction, would apply to much that finds a place in the ordinary run of medical text-books.

The first volume only of this work has reached us up to the present. It deals with Infectious Diseases and Affections of the Heart and Vessels, Respiratory Organs, Digestive System and of the Kidneys. Some of the sections, or short notices, are very brief, and seem to belong rather to a popular encylopædia than to a scientific work. Dr. Syers, although not old fashioned by any means, upholds remedies and methods of treatment, which have stood the test of time, and is very sceptical with regard to those new remedies, which seem to depend for a reputation upon the unflaggiug advertisement of the proprietors.

We note especially the following statements,—that the wooden stethoscope is the only one of real value, the binaural being unsatisfactory and not to be placed in the hands of students at all; that Widal's and Ehrlich's tests in Enteric Fever are of little value; that both menthol in olive oil and lactic acid are of no permanent value when applied locally in tubercular laryngitis; and that percussion of the liver area as a means of determining the size of the organ is absolutely untrustworthy.

It will be seen from this that the author's teaching, if unconventional, is at any rate sound.

DISEASES OF THE INTESTINES.*

NOTWITHSTANDING the extreme importance of intestinal disorders, there is a certain paucity of literature on the subject. Special conditions, such as intestinal obstruction, or special portions, such as the rectum and the appendix, have been well nigh worked out. Aid monographs on them are very numerous. Morbid conditions of the whole intestinal tract have, generally speaking, been only studied collectively in text-books.

Dr. Hemmeter's work (to appear in two large volumes, and of which we have received the first) is likely to become the standard in diseases of the intestines. We are largely indebted to American physicians for pioneer work on the whole subject of digestive physiology, pathology, and diagnosis. The classic observations of Beaumont on the case of Alexis St. Martin have been invaluable as laying a foundation for all subsequent work.

Dr. Hemmeter intends his book to be complete. The first part treats of the anatomy, histology, physiology, pathology, and bacteriology of the intestines. It also includes methods of diagnosis, and the manner in which the author details his facts is very clear. We may even go so far as to say that some of the chapters would rank as monographs if published separately, and we may instance that on the "Bacteriology of the Intestines" as particularly valuable.

The first part of the work closes with a chapter on "Duodenal Intubation." This is a method of clinical examination, which so far has not found much way in this country. The author admits that sufficient details have not been accumulated to warrant any general statement, as to the value of the method. He maintains it is a harmless procedure.

The second part is devoted to Diet, more particularly in relation to certain definite disorders, as Typhoid, Enteritis, Intestinal Tuberculosis, and many others.

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* Diseases of the Intestines. By John C. Hemmeter, M.D. Vol I. London: Rebman Limited.

What to most readers will be the interesting part of the work begins with Part III—Intestinal Clinic. The subjects covered are diarrhœa, constipation, intestinal colic, meteorism, intestinal indigestion, enteritis, dysentry, ulcers of the intestine, and intestinal neoplasms. In each case there is a full description, and the treatment is carefully detailed, not only medical, but also dietetic. Sometimes we notice a slight tendency to the "specialist" style—some concomitant condition of considerable importance in the case being dismissed in very few words.

As a work of reference, we can safely say that it will cover a subject of every day importance, and that in a most complete manner, and so we confidently recommend Dr. Hemmeter's work to those who desire a more extensive acquaintance with intestinal disease that the ordinary text-book or system of medicine will furnish. There are many superb plates and illustrations—so characteristic of American publications, and which compensate for some differences in orthography which strike the English reader, as well as the use of "shall" and "will."

THE PRINCIPLES AND PRACTICE OF MEDICINE.*

It seems almost superfluous to review a book which has rapidly reached its fourth edition and taken such a foremost place in medical literature as Dr. Osler's. There is no school of medicine in the United Kingdom where we do not find it in use, especially among the more advanced students, and as a practical work for diagnosis and treatment those who know it best are most emphatic in its praise. Although the last edition appeared in 1898, Dr. Osler is too active a worker in medicine not to find some modification, or some addition advisable, to keep the work well up to date. Thus in certain subjects which he has made essentially his own we find the more marked differences in the the recent edition. The article on Typhoid Fever is a case in point. It has been almost completely re-written, in consequence no doubt of a very extended study in which the writer has been engaged for some time past. Malaria is another subject which has much to owe to Dr. Osler, and we have now the results of his most recent labours in so very important a disease. We call to mind a recent and valuable contribution to current medical literature in reference to Cerebro-spinal Fever, and we are therefore prepared to find it among the articles which the author has re-cast for his fourth edition. We re-read with interest articles that have not needed much if any revision in a new edition, and they confirm an impression made in the early days of the work that it is original, reliable, and well-balanced. We know of no book so free from tradition; each subject is weighed by itself, and in this consists the charm and value of the book for the student and practitioner of medicine. We must congratulate the publisher on the very excellent style of the work, everyway worthy of one of the leading text-books of medicine.

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* The Principles and Practice of Medicine. By William Osler, M.D., F.R.S., F.R.C.P. Fourth Edition. Edinburgh and London: Young J. Pentland.

NOTHNAGEL'S ENCYCLOPEDIA OF PRACTICAL MEDICINE.*

SAUNDERS' ENGLISH EDITION.

THE second volume of Messrs. W. B. Saunders' English Edition of Professor Nothnagel's Encyclopedia of Practical Medicine is a worthy successor to the opening volume of the series, which we reviewed in a recent number. The infectious fevers of which it treats, whilst hardly analysed with the extreme minuteness characteristic of the treatise on typhoid fever, are yet described with an amount of detail which gives them altogether exceptional value. Not only are the clinical pictures unusually vivid, but the pathology and pathological relations of the various diseases are dealt with from a very broad point of view. On the whole, we have again to express our opinion that these two books on the infectious fevers stand considerably ahead of any similar work in the English language.

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* Nothnagel's Encyclopedia of Practical Medicine. Variola, Vaccination, Varicella, Cholera, Erysipelas, Whooping Cough, Hay Fever. By H. Immermann, Th. von Jurgensen, C. Liebermeister, H. Lenhartz, and G. Sticker. Edited, with Additions, by John W. Moore, M.D., F.R.C.P., Professor of the Practice of Medicine in the Royal College of Surgeons in Ireland. Authorised Translation from the German, under the Editorial Supervision of Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Philadelphia and London: W. B. Saunders and Co. 1902.

The article on Variola is from the pen of Dr. H. Immermann of Basel, who has had wide opportunities for studying the disease. We note that he is inclined to accept provisionally as the specific micro-organism of small-pox, the sporozoon to which the name cytorrhyctes variolae has been given, and which has been investigated and described by von Guarnieri and Van der Loeff. Quite recently, L. Pfeiffer has confirmed the work of these two observers, and there seems every prospect that further investigation will establish the relation between the sporozoon and the disease. Dr. Immermann's clinical description of variola is very graphic, and indeed the article throughout is of great merit. The same writer is responsible for the chapter on Vaccination, and no better or more convincing statement of the efficiency of that much controverted proceeding could be written.

The article on Varicella by Dr. von Jurgensen does not call for special remark, for the subject hardly lends itself to such detailed treatment as is characteristic of the Encyclopedia. It is followed by an admirable and most minute account of Asiatic Cholera by Dr. Liebermeister of Tübingen. In dealing with the question of etiology the writer gives prominence to his belief in the probable existence of an intermediate stage outside the body, in which, and in which alone, the parasite is able to develope its power to infect the human subject. By this means he endeavours to bring into coincidence the views of those who maintain the contagiousness of the cholera poison, and those who believe that peculiarity of locality is the essential factor in the causation of the disease. In explaining the extreme collapse of an attack of cholera, the writer gives first place to the drain of fluid from the tissues, and he insists that at the time when the constitutional symptoms are at their height, absorption from the intestine is at a standstill, owing to the profuse exudation into its lumen. The suppression of urine he is also inclined to attribute mainly to circulatory failure, though he would also allow the possibility of a later toxic degeneration of the kidneys. In treatment, Dr. Liebermeister relies on opium, and later, on general stimulant measures, the subcutaneous injection of saline solution and rectal injection of warm tannin solution. He has apparently no faith in the purgative treatment so warmly advocated by the late Sir George Johnson.

Dr. Hermann Lenhartz of Hamburg enters with great fulness into the subject of Erysipelas, and this article with the chapter on Cholera are, we think, the two best sections of the book. The article is one which is particularly worth reading. Much praise may also be awarded to Dr. Sticker's account of Whooping Cough. Finally, the latter contributes a most interesting account of the so-called "Bostock's Summer Catarrh," or Hay Fever. Dr. Sticker is firmly convinced that this curious complaint will eventually be placed amongst the specific infectious diseases, and believes that its incidence at a particular season of the year is to be explained by the development of the specific poison only under certain conditions of temperature. He would allow to dust and pollen the role only of exciting paroxysms by mechanical irritation of the already hypersensitive mucous membranes.

The volume has been admirably translated by Dr. J. W. Moore of Dublin, who has contributed a few additions to the original text. These additions are marked off by inclusion in brackets, a practice which, whilst declaring their origin, is not without its inconveniences.

ROUGH NOTES ON REMEDIES.*

THERE is but little alteration in the new edition of Dr. William Murray's well-known and much appreciated book, beyond the addition of a chapter on Rothbury as a health resort. Rothbury is a small town lying mostly on the northern bank of the river Coquet, a river running from west to east in one of the valleys of Northumberland. The town faces south and lies from 200 to 300 feet above the level of the sea. It is well protected to the north west and east by hills, and has a climate which is both bracing and mild. Dr. Murray believes that it possesses unusual advantages as a health resort, and that, whilst enjoying something of the mildness of the Devonshire climate, it has none of the enervating effects of the southern resorts.

For the rest, the book stands practically unchanged, and no further testimony is needed of its value. It is full of wise, practical advice, and many of the hints on treatment are of the greatest clinical importance. Our own experience does not, in all cases, coincide with that of Dr. Murray, notably with regard to the employment of large doses of arsenic in chorea. We must confess that we have been greatly puzzled by the want of success with which this treatment has been attended in our own hands. Dr. Murray's records are, however, convincing that there are some cases at any rate which respond readily to this method of treatment, but we can assure him that there are not a few which are equally resistant.

THE JOURNAL OF OBSTETRICS AND GYNÆCOLOGY OF THE BRITISH EMPIRE.

WE have received from Messrs. Baillière, Tindall and Cox the first number of a new monthly periodical entitled the *Journal of*

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* Rough Notes on Remedies. By Wm. Murray, M.D., F.R.C.P., Lond. Fourth Edition. London: H. K. Lewis, 1901.

Obstetrics and Gynæcology of the British Empire, and published under the editorship of Mr. Alban Doran, with the aid in special departments of Drs. Berry Hart, F. W. Kidd and W. J. Sinclair. With these are associated a small Editorial Committee of which we are glad to see that Dr. Malins is a member. There are further 58 collaborators representing the chief centres of Great Britain and the Colonies. The first number contains five original articles by Drs. Cullingworth, Horrocks, Berry Hart, Sinclair and Murdoch Cameron. It further contains a critical essay on anæsthesia by subarachnoid injections of cocaine in the lumbar region by Mr. Arnold Lea, a review of current literature, the transactions of two societies, and reviews of recent books. The journal is unconnected with any society, and in this respect stands alone amongst the British periodicals on these subjects. It should have a successful future before it.

TWO BOOKS ON FIRST AID.*

Messrs. John Wright & Co. send us two books concerned with the principles of first aid. One of these is the ninth edition of the late Mr. Pye's well-known little work on bandaging, surgical dressing, etc, which is mainly a re-issue of the corresponding parts of the same author's larger treatise on Surgical

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* Elementary Bandaging and Surgical Dressing, with directions concerning the immediate Treatment of Cases of Emergency. By the late Walter Pye, F.R.C.S., Surgeon to St. Mary's Hospital. Revised by Thomas Carwardine, M.S., F.R.C.S., Assistant Surgeon, Bristol Royal Infirmary. Ninth Edition. Bristol: John Wright & Co., 1901.

First Aid to the Injured and Sick: an advanced Ambulance Handbook. By F. J. Warwick, B.A., M.B. Cantab., M.R.C.S., Surgeon-Captain, Volunteer Medical Staff Corps, London Companies; and A. C. Tunstall, M.D., F.R.C.S. Ed. Surgeon-Captain commanding the East London Volunteer Brigade Bearer Company. Bristol: John Wright and Co., 1901.

Handicraft. The present edition has been carefully revised by Mr. Thomas Carwardine, and, while retaining all the characteristics of the original work, has been brought thoroughly up to date. The second of the two books is an excellent first aid handbook, of a somewhat advanced type, by Drs. F. J. Warwick and A. C. Tunstall. Both of these writers have gained practical experience of what is needed in such a book in the posts which they hold in connection with the London Volunteer Brigades, and they have themselves been lecturers on ambulance work. We congratulate them on the excellence of their book.

INDEX-CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, UNITED STATES ARMY.*

THE present volume of the Index-Catalogue of the Surgeon-General's Library at Washington is the sixth of the second series, and carries the catalogue well into the letter H. Its contents represent 5,865 volumes and 14,296 pamphlets. We have repeatedly expressed our opinion of the immense value of this work. The thanks of the medical world are due to its author, Surgeon-Major James C. Merrill, as well as to the authorities under whose auspices it is carried out.

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* Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Second Series. Vol. VI. Washington: Government Printing Office. 1901.

SURGICAL APPLIED ANATOMY.*

At this date no words of ours are necessary in praise of this book. It has long held the foremost place among the smaller works on Surgical Anatomy, and it has done so for many reasons; chiefly, in our opinion, because while containing an enormous number of facts, it can in no way be called a cram-book. What it does is to show the student that, after all, Anatomy is not a dull uninteresting subject, but that all its facts have an important bearing on Surgery. It teaches the surgeon, too, the extreme importance of retaining a good knowledge of anatomy. The present edition has been thoroughly brought up-to-date and many new engravings have been inserted, while the size of the volume has wisely not been increased.

THE BRADSHAW LECTURE ON PROGNOSIS IN RELATION TO DISEASE OF THE NERVOUS SYSTEM.†

In his Bradshaw Lecture for 1901, Dr. Judson Bury has made as much as could possibly be expected out of a very difficult subject. From the point of view of clinical interest prognosis in nervous disease is not a bad subject, but we are bound to admit that not very much of practical importance arises from its discussion. For this, however, the author is not to blame. Dr. Bury treats of prognosis in relation to size, situation and nature of the lesion, in relation to symptoms, and finally in relation to treatment. About the first and last of these subdivisions there is necessarily but little to say, but the second is illustrated by the relation of many interesting cases, and for this reason is of considerable clinical value. Some of the problems in diagnosis which he propounds appear to be quite insoluble in consideration of their final result, and other instances of the temporary falsification of diagnosis by a fleeting improvement, or even recovery, are recorded. On the whole the main lesson to be learnt from the lecture is that of caution in prognosis, even in the face of apparently certain and hopeless conditions.

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* Surgical Applied Anatomy. By Sir Frederick Treves. New edition. Revised by the author with the assistance of Arthur Keith, F.R.C.S. London : Cassell and Co. 1901.

† The Bradshaw Lecture on Prognosis in Relation to Disease of the Nervous System. By Judson S. Bury, M.D., Lond., F.R.C.P., Physician to the Manchester Royal Infirmary. Manchester : Sherratt and Hughes.

THE FOUR EPOCHS OF WOMAN'S LIFE.*

We do not as a rule care for medical books written for the instruction of the public. But we must admit that the advice in Dr. Galbraith's Four Epochs of Woman's Life is in the main wise and wholesome, and that the subject is one which perhaps justifies its publication. We are, however, not a little puzzled by the section on the marriage relation. The book is written exclusively for the perusal of women: yet we are at a loss to understand what good they could derive from the particular section to which we refer. The fact is that Dr. Galbraith—by a curious twist in logic to which we shall perhaps be excused if we apply the term feminine—has taken the opportunity to express views which are obviously intended for the male sex, but which, even if true, when read by women could only serve to accentuate the difficulties of early married life. Much practical advice might be given on this subject, and we trust that Dr. Galbraith will re-write this section in future editions.

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* The Four Epochs of Woman's Life. By Anna M. Galbraith, M.D., Attending Physician Neurological Department, New York Orthopedic Hospital and Dispensary. With an Introductory Note by John H. Musser, M.D., Professor of Clinical Medicine, University of Pennsylvania. Philadelphia and London: W. B. Saunders and Co.

THE EDINBURGH MEDICAL JOURNAL.*

We have to acknowledge the receipt of the tenth volume of the new series of the Edinburgh Medical Journal, edited by Dr. G. A. Gibson. The journal is too well-known as being in the very front rank of British medical periodicals to need any praise from us. It is of course primarily the representative of the Edinburgh school of medicine, but its contributors are by no means confined to that school, as a glance at the list of original articles will show. The list contains a large number of papers of scientific and clinical importance.

PRACTICAL HISTOLOGY.†

This book is to a certain extent a portion of the "Practical Physiology and Histology," by Prof. M. Foster and the author, the histological part of which has been transferred to the present work and considerably enlarged.

The writer's long experience as a teacher is more than a sufficient guarantee of the value of his "Practical Histology." All the methods given have been personally tested by him, or under his supervision, and may therefore be accepted as demonstrating some important histological feature. There are so many methods and modifications of methods now, that even the advanced student requires some judicious advice, unless he would waste his time and material, in the preparation of microscopical specimens. We strongly recommend Dr. Langley's work on histology to both students and teachers.

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* The Edinburgh Medical Journal. Edited by G. A. Gibson, M.D., F.R.C.P., Edin. New series; Vol. x. Edinburgh and London: Young J. Pentland.

† Practical Histology. By J. N. Langley, M.A., D.Sc. London: Macmillan and Co.

THE SANITARY INSPECTOR'S HANDBOOK.*

Mr. Taylor's Sanitary Inspector's Handbook has acquired a well deserved reputation for thoroughness and usefulness in this particular department.

In the present edition the general plan of the work has remained unchanged, but the text has been amplified. Recent legislation has rendered necessary some insertions, more especially in reference to bye-laws of the London County Council. We strongly recommend those going in for the various examinations for Diplomas in Public Health to become conversant with the contents of this work. It is not exactly a text-book of public health, but rather a manual of applied sanitary science, and a useful compendium of the Laws relating to Sanitary questions.

THE PRINCIPLES OF HYGIENE.†

The aim of this work is to furnish the medical practitioner and student with a simple but reliable manual of public health. The book does not attempt to be exhaustive, but owing to the clearness of the style, we feel sure that the ordinary professional man will obtain a very satisfactory and, for all ordinary purposes, adequate knowledge of the subject of hygiene. The lay reader, too, will benefit by a study of Dr. Bergey's work. There are many larger books on the subject of sanitary science, which are too fully detailed for the architect and builder, but in the present one we believe they will find many practical suggestions that cannot fail to be of much value in their respective departments. Sound and practical is the verdict on the book.

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* The Sanitary Inspector's Handbook. By Albert Taylor. Third edition. London : H. K. Lewis.

† The Principles of Hygiene. By W. H. Bergey, A.M., M.D. London : W. B. Saunders and Co.

DOSE BOOK AND MANUAL OF PRESCRIPTION WRITING.*

In this edition of Dr. Thornton's work certain changes have been made. There are additions to the chapters on "Prescription Writing," and incompatibilities and appropriate references have been introduced in the text as to the use of many of the most important and reliable serum preparations. The book aims at being thoroughly practical in every way. We have pleasure in bringing it to the notice of our readers.

A LABORATORY COURSE IN BACTERIOLOGY.†

This volume has been prepared as a guide to the beginner in bacteriology, and is so written that it will prove of use to the lay student as well as the medical, for, as the writer remarks, this branch of natural science can no longer be regarded as the exclusive domain of the medical school. The book does not pretend to be a manual, its aim being less ambitious. It contains many practical suggestions, and is likely to prove useful to the student.

THE PATHOLOGY AND TREATMENT OF SEXUAL IMPOTENCE.‡

We have received a copy of the third edition of Dr. Vicki's work on Sexual Impotence. It is evident that the author has devoted a considerable amount of time and patience to this question, but we cannot quite subscribe to all his views on either pathology or treatment. The writer, we are inclined to think, is given to drawing too hasty inferences. At the same time the book contains some useful information.

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* Dose Book and Manual of Prescription Writing. By E. Q. Thornton, M.D. Second edition. London and Philadelphia: W. B. Saunders & Co.

† A Laboratory Course in Bacteriology. By Frederic P. Gorham, A.M.

‡ The Pathology and Treatment of Sexual Impotence. By Victor G. Vecki, M.D. Third Edition. London: W. B. Saunders and Co.

THE SOCIETY OF MEDICAL PHONOGRAPHERS.

We are asked to state that the next Annual Shorthand Examination, for which two prizes of £5 each will be offered, will be held on May 20th, 1902, at any provincial medical centre in the United Kingdom at which not fewer than three candidates shall present themselves. The competition will be open without entrance fee to any registered medical student who has not taken a first prize at one of the Society's previous examinations. One of the prizes will be awarded to a first-year student; the other to a student of older standing.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

THE DOWSING ELECTRICAL RADIANT HEAT AND LIGHT APPARATUS.

Messrs. Salt & Son have forwarded to us particulars of their installment of the Dowsing apparatus for the treatment of rheumatic affections, sciatica, etc., by dry heat. The apparatus consists of a bed surrounded by powerful electric lamps, the heat from which is reflected on to the bed by metal reflectors. By this means, the whole body, or any part desired, can be exposed to a very high temperature, which, being dry, is born without discomfort. For the application of heat to particular joints, smaller pieces of apparatus are provided. The treatment is carried out under the supervision of a nurse specially trained in the use of the apparatus.

We have received from Messrs. Burroughs and Wellcome specimens of "Soloid" Sodium Hydroxide gr. 2, and of "Soloid" Pyrogallic Acid gr. ½. These products have been introduced with the view of providing a ready means of estimating the degree of oxygenation of a sewage effluent. It is generally admitted that a sewage effluent, in order to be satisfactory, should be well charged with oxygen, whereas if the effluent contains little or no free oxygen it will not act satisfactorily.

The following directions are given for the carrying out of the test:—Fill a wide-mouthed bottle. holding about four ounces, with the effluent as it runs from the beds; drop in one "Soloid" product of each reagent, and insert the stopper carefully and in such a way as not to include any bubble of air. Shake the bottle for about half-a-minute and note the effect produced. If the liquid remain colourless or only faintly coloured, the oxygenation is not satisfactory. If the liquid assume a rich red-brown colour, the oxygenation is satisfactory.

Messrs. Burroughs and Wellcome also send us samples of a new tabloid containing gr. ⅛ of yellow iodide of mercury. The salt is a pure mercurous iodide, and, unlike the green salt sometimes used for therapeutic purposes, contains no free mercury. It is therefore a more definite and reliable preparation than the green iodide.

New Books, etc., Received.

From Charles Griffin and Company, Limited—

Forensic Medicine and Toxicology. By J. Dixon Mann, M.D., F.R.C.P. Third Edition, revised and enlarged.

From the Scientific Press, Limited—

Burdett's Hospitals and Charities, 1902.

From John Wright and Company—

The Medical Annual, 1902.

From Henry Kimpton—

The Treatment of Neurasthenia. By A. PROUST and GILBERT BALLET. Translated by PETER CAMPBELL SMITH, L.R.C.P., L.R.C.S., Edin.

From R. and R. Clark, Limited—

The Causes of Death among the Assured in the Scottish Widows' Fund and Life Assurance Society from 1874 to 1894, inclusive. Reported by CLAUD MUIRHEAD, M.D., F.R.C.P.E.

We have also to acknowledge the following—

Ueber die Verwendbarkeit des Wasserstoffs-superoxyds in der Zahnheilkunde. Vortrag gehalten von Dr. Med. Rud. Dorn.

Foreign Bodies accidentally left in the Abdominal Cavity. By AUGUST SCHACHNER, M.D.

The Uses of Tuberculin. By CHARLES DENISON, A.M., M.D.

Birmingham Free Libraries. List of Books, Pamphlets, and Magazine Articles on British South Africa, etc.

Injuries of the Eyelids and Eyeballs, and other Papers. By L. WEBSTER FOX, A.M., M.D.

Birmingham General Hospital. 122nd Annual Report.

⁎ Authors can have reprints of articles at the following rates:—

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The Subscription to the *Birmingham Medical Review* is 6s. per annum, post free.

NOTICE.—*All Communications, Exchanges, and Books for review, should be sent direct to the Printers and Publishers, Messrs. Hall and English, 36, Union Street, Birmingham.*

THE

BIRMINGHAM MEDICAL REVIEW.

MAY, 1902.

ORIGINAL COMMUNICATIONS.

ABSTRACT OF A CLINICAL LECTURE ON DISEASES OF THE BREAST.*

BY WILLIAM F. HASLAM, F.R.C.S.,
SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM.

Gentlemen,

The diagnosis of the nature of swellings situated within the breast is often attended with considerable difficulty; indeed, unless care be taken, it is possible to be quite mistaken as to the nature of the growth, and to remove the organ for what is supposed to be a solid tumour, and to find only a chronic abscess, that should, of course, have been treated by less radical measures. I propose, therefore, to draw your attention to-day to some points in the method of examining a breast, that will enable you to elicit the facts of the case, and to form an opinion based on a careful examination of the case.

It is necessary, first of all, to briefly draw your attention to some points in the anatomy of the breast, that have a bearing on the question.

The breast, which varies much in size in different people, is a superficial and apparently well-defined organ. Now it is important to remember that it is not nearly so well-defined as it appears to be. There are often small out-lying masses of breast tissue that push out into the fat around the circumference of the breast, or on to, or even through, the fascia on which it rests, and that these may easily be left behind when removing a breast, unless their possible presence is remembered. Moreover, these processes may themselves be the seat of morbid growths, so that a tumour may be placed quite at the margin, or even beyond the margin of the breast. Small fibrous processes, forming suspensory ligaments, pass from the interstitial tissue of the breast to the skin, and anything that will drag on or cause contraction of these will produce dimpling of the skin. This dimpling is often seen in cases of carcinoma, and is a most valuable sign. The lymphatics pass principally to the axillary glands; some few enter the thorax.

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* Delivered at the Hospital, May 1st, 1902.

Looking therefore to the intimate association of the breast with surrounding parts, it is evident that a cancerous growth may involve not only the neighbouring parts, but that it may spread into the fat around the main mass of the organ, or into the skin over it, or the fascia and muscle on which it rests.

Remember also that in cancer of the breast, the growth destroys and takes the place of the breast tissue to a very large extent, so that it is possible to find a large mass of cancer in a breast which is no larger than the healthy one. This is especially the case in the hard kind of cancer, and is seen in its most marked form in those cases where the deposit spreads widely in the skin over the breast, forming what is known as *cancer en cuirasse*, and the breast is squeezed between the deposit and the chest wall.

It is necessary to make a careful and systematic examination of every case of tumour of the breast that you are asked to see, for unless this is done you will frequently make mistakes. Before examining the breast, have a good look at the patient herself, and ascertain her age. The age is to some extent of interest, for without being too dogmatic on this point, one may say that it is unusual to find malignant growths before 30, and that after that time they are more common than innocent ones. Useful information may be obtained by noting the condition of the patient, for a carcinoma will run quite a different course in a thin spare woman to what it will in one who is stout and florid. In the former it may last for years, for its epithelial elements seem to be unable to make any headway, and its fibrous tissue contracts so that the whole is rather an atrophic than a growing mass. In the latter, there seems to be often just the soil that is necessary for its growth, and from time to time one sees these tumours progress with frightful rapidity. Note then, carefully, the sort of patient you have to deal with, with a view to the question of prognosis.

Now get the patient to uncover the whole front of the chest, and place her in such a position that you can examine the breast and axilla with ease. The most satisfactory plan is for her to lie on her back on a bed or couch. You should then stand by the side opposite to that on which the disease is situated, for by so doing, while you will be able to examine the breast equally well with both hands, you will find that one hand will be able to examine most conveniently the axilla. Thus with the disease on the left side, stand on the right and use your right hand to examine the axilla. If the disease is on the right side, stand on the left side and use your left hand for that purpose. While it is not necessary in every case for the patient to be lying down you will find that in some few, when you are doubtful whether the sense of elasticity you have made out is due to fluid in a tense cyst or to a new growth, you can only make a satisfactory examination when she is in that position, and the breast rests on the chest wall. If the patient is not lying down you can let her sit in a chair and stand before her using your right hand for the left axilla and your left for the right; or if you elect to stand behind her, use the same hand as the side on which the disease is situated.

Before touching the breast, examine carefully by inspection, for much may be learnt by this alone. Indeed, in some few cases, when from some unaccountable reason a woman has allowed a growth to develop to a great size before seeking advice, any further examination is really only to confirm what the eye has already seen. Such cases are fortunately rare now, and it is to be hoped they will become more so. Note the size of the breast, and the exact position and size of any swelling that may be present. The skin over a tumour may be normal in appearance if not involved or unduly stretched by it, or it may be red and thin, as in some cases of rapidly growing sarcoma, or red and infiltrated, desquamating or ulcerated, as in carcinoma. There may be nodules of growth visible around the main mass, as in some cases of extreme malignancy. The skin may be dimpled or puckered from traction on the suspensory ligaments. If the skin is completely destroyed, its destruction may be effected in one of two ways; either by the growth gradually spreading into it and then destroying it by ulceration, as in cases of carcinoma, or by its being stretched over a rapidly growing tumour, so that it becomes thinned and finally destroyed rather by a process of atrophy than by one of ulceration. In such cases the growth may then protrude through the skin as a hernia, and the margin of the hole through which it protrudes is thin and easily seen, the appearance being altogether different to that seen in cases of ulceration following infiltration of the skin itself by the growth.

The nipple has claimed much attention from the fact that in many cases of carcinoma it becomes retracted. But inasmuch as it is often retracted when there is no disease of the breast at all, it loses some of its value as a point in diagnosis. The nipple may be naturally small and apparently retracted, or its retraction may be due to a previous inflammation of the breast. When there is retraction as the result of carcinoma, it is caused by the growth having involved the ducts, and as it contracts, traction is made on the nipple; hence this is often more retracted on the side nearest the growth. Notice whether there is any discharge from the nipple, and if so, what are its characteristics. A chronic eczematous condition of the nipple and its areola is sometimes present, and is a clinical fact of much importance, as it is frequently associated with cancer. It is known as Paget's disease of the nipple, and it is characterised by the skin being very red, with considerable thickening of its substance, and the margin of the patch is well defined.

Having now inspected the seat of the disease, proceed to examine it with the hand. In doing so, it is necessary at first to use the flat hand, and not to feel the breast with the tips of of the fingers as is often done. With the flat hand it is possible to detect the slightest thickening or localised swelling, and to differentiate it from surrounding breast tissue, whereas by using the finger tips a small tumour may be missed, or the part of the breast between the fingers may feel sufficiently hard and defined to suggest its being thickened by inflammation or growth.

The points to make out by palpation, using first the flat hand and then both hands, are—

1. The exact position of the tumour.

2. The nature of its surface; whether smooth or irregular, hard or soft.

3. Its consistence; whether it is entirely fluid or solid, or whether cysts are present as well as solid material. There is often much difficulty in distinguishing between fluid in a tense cyst and some rapidly growing tumours. Note whether the centre of the swelling feels more elastic than the periphery; this is in favour of its being fluid, for in growths the centre usually feels firmer than the margin. It is in such cases that the patient must be placed on her back, so that the breast is supported on the chest wall. If still in doubt, a hypodermic needle may be used and the swelling tapped; but remember that even if fluid is drawn off that is not pus, you may still be in doubt as to whether there is any growth around it. It is a good routine practice to make an incision into all growths at the time of operation where there is any possibility of doubt as to their nature. Such caution may prevent you from removing a breast unnecessarily.

4. Its margin; whether clearly defined as is the case with an adenoma, or whether this passes imperceptibly into the neighbouring breast tissue as in inflammatory conditions and in rapidly growing carcinomas, or whether processes can be felt radiating from its centre as are occasionally felt in some cases of hard carcinoma.

5. Its relation to the breast, the nipple, the skin, and the pectoral muscle. If the breast is grasped with one hand and the tumour with the other, it will be possible to move the latter to some extent while the former is fixed, if it is encapsuled within the breast, as is the case with an adenoma. This independent movement does not exist with carcinoma, as this growth incorporates itself firmly with the rest of the breast. If the tumour involves or is attached to the ducts leading from the nipple, traction on it will produce some retraction of the nipple. It may be noticed on attempting to move the skin over the surface of the swelling or to pinch it up, that there is an evident attachment between this and the swelling. This attachment may be due either to traction on the suspensory ligaments when carcinoma is present, or to a patch of inflammation spreading slowly towards the surface; in the latter case, there may possibly be some slight redness, œdema, or increase of temperature, though if the inflammation is very chronic these signs will all be absent.

A normal breast can be moved freely over the pectoral muscle when the arm is raised and the muscle put on the stretch, the movement being free either across its fibres or in the direction of their length. This, however, is not the case if a growth is gradually infiltrating the deep part of the gland and is involving the fascia over the muscle or the muscle itself. On examining for this movement, the breast is found to rock on the point of fixation if this is only slight, or even to be quite fixed if the infiltration is more extensive. The organ cannot be moved over the surface of the muscle as in health. You may take it that the actual amount of infiltration is always greater than it appears to be.

6. The examination of the axilla must now be made, and especially under the pectoral muscles and by the vessels. It is well to remember that you can only obtain positive information if you feel enlargement of the glands. If the axilla is carefully examined by a competent person, he can report either that he does or does not feel enlarged glands; but if he does not feel any he cannot say that none are present, for with every care small glands deeply placed, or even larger ones in a fat woman, may escape detection. It is, of course, quite possible to overlook considerable masses of glands, unless you make the examination with care and precision. The patient's arm should be close to her side, and the hand that most easily passes into the axilla must be used for its exploration. Some years ago, when the operation for removal of a breast was conducted on less radical lines than at present, the axilla would probably not have been opened if the surgeon believed the glands to be healthy, so that it was considered important to ascertain beforehand whether there was any enlargement or not. At the present time, however, you examine the axilla for another purpose, not to make out whether it should be opened or not, but to give you some idea of the extent of the involvement of the glands, and whether their position and size are such as to contra-indicate any operative interference. The axilla is always opened and cleared out now when the breast is removed, and you will invariably find that the glandular enlargement is greater than you have been able to detect beforehand.

You should also examine the supra-clavicle glands. Enlargement of these adds very much to the gravity of the case, as it means that the cancerous material reaches in an unbroken line from the tumour to the neck, and that if any attempt is made to remove the disease the whole of this line must be attacked by a most formidable operation.

In advanced cases of carcinoma, where there is pressure on the veins and lymphatics, œdema of the hand and arm is present, and the case is not suited for operation. In all cases a search should be made for secondary deposits in the internal organs, the bones and the skin, and any so-called "neuralgic" or "rheumatic" pains in the chest, or about the bones, should arouse suspicion.

There is no doubt that in the early stages of this disease the amount of pain varies very considerably. In some cases the tumour is found quite accidentally, and there has not been any pain to direct the patient's attention to the part. Indeed, some tumours may attain a considerable size before any pain is felt. The absence of pain is really an unfortunate occurrence, for not unfrequently the patient will hesitate to seek advice for a swelling that is not associated with pain, and hence valuable time is lost. When pain is present, it varies in amount and extent. From an occasional sharp pain in the breast, or radiating round the chest, or down the arm, it may be of such severity as to cause great distress.

APPENDICITIS: ITS PROGNOSIS AND TREATMENT,*

WITH AN ANALYSIS OF 91 CASES.

BY GEORGE HEATON, M.A., M.B., F.R.C.S.

I MAKE no excuse for choosing a subject which to some present may perhaps seem to have been worn almost threadbare. I do not do so for several reasons. For whatever may be the cause of the increasing frequency of the disease, few I fancy will deny that this increased frequency does exist; and that it spares neither doctor nor patient we have unfortunately had abundant evidence during the past year, though we can fortunately congratulate our medical brethren on their escape from its fatal maw.

Then again, the disease itself assumes such different clinical forms and varies so greatly in its severity, while our modes of combating it differ so widely that the subject forms an excellent one for discussion.

Personally, too, the disease has for me a somewhat melancholy interest, as during the last few years I have lost no less than four close personal friends in its clutches.

The remarks I intend to make on the treatment and prognosis of this disease are based upon notes of some 91 cases of appendicitis I have had under my own immediate care during the last few years. These cases have been of all grades of severity, and include 21 cases where no active surgical treatment was necessary. I shall not attempt to inflict upon you clinical details of any of the cases, but shall perhaps allude to some peculiar clinical features of some few of the cases.

For purposes of Prognosis and of Treatment, cases of appendicitis may from a clinical point of view be roughly divided into four classes.

1. Acute simple appendicitis, where the inflammation does not go on to the formation of pus, and where complete resolution as a rule follows.

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* Read before a meeting of the Midland Medical Society on March 5th, 1902.

2. Acute appendicitis with the formation of a localised peritonitic abscess, or an abscess in the cellular tissues behind the cæcum.

3. Acute fulminating appendicitis with general septic peritonitis.

4. Chronic and relapsing appendicitis.

The treatment of each one of these varieties is now laid down on fairly definite lines, and if only we could be sure which variety were present in any given case, the main lines of our treatment would be clear. But unfortunately it is a disease which is apt to assume such very different clinical aspects, that it is extremely difficult, if not impossible, sometimes to decide which variety we are dealing with.

We will commence with the treatment of a case of Acute Simple Appendicitis. Such cases fortunately constitute the great majority of the disease in question, and, as a rule, get quite well under a purely medical or expectant treatment.

Absolute rest on the back in bed is the first essential, and to obtain this it is necessary to have good nursing. In fact, the issue of a case of simple appendicitis depends in large measure, as in a case of enteric fever, on the quality of the patient's nursing. He should remain in bed until all pain and tenderness have entirely disappeared, and no swelling or thickening can be detected in the region of the appendix. Many a relapse owes its occurrence to insufficient rest during convalescence, and for this reason such relapses are a good deal more frequent amongst hospital than amongst private patients.

A careful watch is to be kept upon the pulse and temperature, and these should be taken regularly night and morning. A rise in the pulse rate, or return of fever after the first subsidence, is usually the first warning of the formation of pus; and, no matter how well the patient may express himself as feeling, a rapid and rising pulse rate should always make us suspicious that all is not as it should be.

As soon as vomiting, which as a rule does not continue more than one or two days, has ceased, the patient may have fluid spoon food, and should be kept on a purely liquid diet until convalescence is established. Milk is apt to cause distension and increase the constipation. It should be peptonised before given, and diluted with barley water or soda water. Beef tea, mutton broth, meat jellies, and the like, form an agreeable change.

Drugs.—It is of the greatest importance at the commencement of an attack to get a free evacuation of the bowels. Constipation is the rule, and it is often most obstinate. Maylard* and D'Arcy Power† recommend hourly doses of magnesium sulphate until the bowels are moved. There is no doubt that such treatment does cut short a mild attack of appendicitis, and is an excellent mode of securing our end in such an attack. But we can seldom tell at the very commencement of the illness whether it be not one of perforative or gangrenous appendicitis, and I know of no mode of treatment more calculated to expedite an impending perforation than a brisk saline purge given by the mouth. For this reason it is, in my opinion, wiser to empty the bowels by enemata. A large simple enema should be given, and if this is not effective it should be followed by one of turpentine, castor oil, and olive oil. The improvement which follows a free action of the bowels is often little less than marvellous. Opium, marking as it does the patient's symptoms, and paralysing the peristalsis of the intestine, should not be given as a routine. To withhold it entirely may be best of all; but it is often a counsel of perfection. A hypodermic injection of morphia is frequently necessary at the commencement of an attack to relieve the patient's agony, but should not be repeated. The pain will usually subside under local applications, unless pus is actually being formed.

No drug seems to have any influence on this course of the disease. Salol given in 5 or 10 grain doses every six or eight hours acts as a mild intestinal antiseptic, and assists in relieving the abdominal distension. When given after a feculent abscess has been opened, it certainly quickly renders the pus less foul.

The question of stimulants must be judged of separately for each patient. In the milder cases none is necessary: in the fulminating septic cases too much can scarcely be given.

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* *Glasgow Med. Jour.*, March, 1899. † *Brit. Med. Jour.*, Nov., 1899.

As regards local applications, both warmth and cold have their advocates. Cold, if used, must be applied either in the form of an icebag, or by means of an ice coil. In either case the weight is apt to be complained of by the patient, and the method of application is cumbersome and somewhat difficult: but it is frequently grateful to the patient. My own chief objection to cold is on account of its depressant action.

Most hot applications are usually well borne. Hot fomentations frequently changed, with occasionally a little opium sprinkled on the surface are usually most comforting. They ease the pain by relaxing the tissues, and at the same time are useful for their cleansing action on the skin.

When the pain and tenderness are very acute in the early stage, and are causing much distress, the application of two or three leeches will often act as a charm, and seldom fail to give relief. The objection raised against them is that if afterwards an operation becomes necessary, the skin is infected by the leechbite: but I have never found this a source of danger in my own cases, and use them frequently.

To avoid a recurrence of such attacks; absolute regularity in the action of the bowels is of primary importance. Some mild laxative, such as cascara sagrada must be habitually taken until this regularity has been assured. Next in importance to my mind comes the thorough mastication of all food. Can it be that the hurried and irregular meals which medical men are so often forced to take, have something to do with their vulnerability to the complaint?

A very large number of patients after such an attack of appendicitis have never any more trouble. It is difficult to ascertain the exact percentage of cases which afterwards suffer from relapses. The majority of the cases admitted into the surgical wards of our hospitals have had previous attacks. But it is not fair to judge solely from these cases which are usually suppurative ones. Relapses probably occur in about 30 or 35 per cent. of all cases. Unfortunately, when they do occur, the nature and severity of a previous attack will serve as no guide in determining the probable severity or mildness of the relapse.

A patient who has had a second attack should be advised to submit to an operation for the removal of the diseased organ. This can be done in a quiescent interval with very small risk to life.

We now pass on to the Second class of cases,—those in which suppuration is impending, or has taken place; and here the difficulty of the subject becomes apparent. For while we shall best consult our patient's interests by withholding the knife,—at any rate until a quiescent interval—in all cases of simple or non-suppurative appendicitis, it is our bounden duty as soon as we feel sure that pus has actually been found, no matter how small its amount, to lose no time before we let it out.

In some cases the appendix—usually the seat of old standing disease—suddenly gives way, or the inflammation by its very intensity causes actual gangrene of the organ, and a most virulent general septic peritonitis exists practically from the commencement of the attack. These cases, which may be termed the fulminating variety of appendicitis, though awful in their rapidity and extreme fatalness are fortunately rare. As a rule, before actual general septic peritonitis supervenes there has been a localised peri-appendicular abscess present for some time previously, and it is the bursting of this abscess which afterwards causes the fatal mischief.

There is no one symptom which will infallibly guide us in detecting the formation of pus around the appendix. The temperature may remain normal, the pain and tenderness may have abated, the pulse even be of normal frequency, and yet a fair sized abscess may have formed. But as a rule, a careful constant watch on the patient's condition and symptoms will enable us to form an accurate opinion on the subject. In cases which are undergoing resolution, the general constitutional symptoms—the fever, the pulse frequency, the pain, the tenderness and the distension—will all be undergoing improvement after the end of forty-eight hours. The patient should begin to sleep better, his appetite begin to return, his tenderness be less marked though more localised, and his peculiar pinched facial aspect gradually to disappear.

The temperature chart often gives us the earliest warning. It may remain continuously high instead of gradually beginning to fall towards the normal towards the close of the first week. In other cases after a fall towards normal it begins to rise again. This is in itself a very suggestive sign and should make us suspicious that pus is forming.

The changed facial aspect of the patient is again very suggestive to the careful watcher. He has a pinched anxious expression with dark areolæ under his eyes. The pinched careworn expression is no doubt in large measure due to his pain and want of sleep.

Pain and tenderness which were subsiding, generally become more pronounced again. The pain prevents sleeps, and sometimes causes great restlessness. The tenderness re-appears and may be even more acute than it was at the commencement of the attack. When pus is forming in the true pelvis there is often frequency of micturition and pain during the act. Enemata for the relief of constipation at the same time become much more painful during their administration.

The pulse is accelerated in the majority of cases when pus is actually forming, or has formed. It generally ranges between 80 and 90, but may run up to 120 or 130 in severe cases. On the other hand, a pulse of 75 or 70 is no certain proof that pus is not present, and I have had several cases under my care illustrating this.

The appetite usually fails, and the tongue instead of cleaning has a tendency to become dry and brown. Vomiting occasionally sets in again.

A careful examination of the abdomen shows that the localised inflammation in the right iliac fossa is extending. Respiration becomes somewhat quicker and less abdominal, the lower half of the abdomen remaining almost still. The abdomen itself becomes fuller and more distended, and the swelling in the right iliac fossa becomes daily larger. Examination of the rectum should never be omitted. In a large number of cases a fulness or definite tumour can thus be felt, and this in cases of suppuration grows daily larger. When the appendix lies in the pelvis, and the abscess is almost wholly pelvic, the rectal tumour may be the only local evidence of pus until the abscess has become so large as to rise up out of the pelvis.

The bowels in some cases of suppuration become loose, and constipation gives place to diarrhœa. I have had several cases where profuse diarrhœa persisted almost from the commencement, until pus had been let out, and then spontaneously ceased.

Another valuable clinical guide, and one which will seldom fail us, is a repeated daily examination of the blood and estimation of the number of leucocytes present. It is a method of investigation which is by no means difficult or intricate. There is no necessity to take the apparatus or microscope to the patient's bedside, but, the pipette having been filled, and the dilution made at one's ordinary visit, the count may be made at home at one's leisure. It is of great value in all cases of suspected deeply-seated suppuration, and is a method which only needs to be more widely known to be appreciated at its full value.

When in the absence of any complicating chest trouble, such as pneumonia, the leucocyte count is found to be abnormally high, reaching, for instance, 18,000 or 20,000, and particularly if this number increases day by day, pus will invariably be found if operation be undertaken. And conversely, if the leucocyte count be day by day diminishing, even though the patient's general symptoms remain acute, we may with comparative safety wait in hope that the inflammation may undergo resolution.

Some months ago I published a short paper on this subject in the *Medical Magazine**; the subjoined illustrative cases are taken from that paper:—

Case 1. *Appendicitis; marked Leucocytosis; large Pericæcal Abscess.*—A. L., a boy, æt. 8; first attack; duration of illness, eight days; ill-defined tumour in region of appendix; pulse, 108; temperature, 101. Next day, condition the same. Third day, not so well. Leucocyte count, 37,980 per c.mm. Operation; large collection of pus found behind cæcum and colon. Uneventful recovery.

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* *Medical Magazine,* Vol. X. No. 8.

Case 2. *Appendicitis with formation of Localised Abscess. Rising Leucocytosis.*—G. C, æt. 14; admitted on third day of illness. Leucocyte count falling after admission with abatement of symptoms; then rising leucocyte count on 7th day of illness. Abscess opened on 8th day, followed by gradual fall in the leucocyte count until convalescence.

Aug. 1st.	Leucocyte	count,	21,840.	
,, 4th.	,,	,,	17,600.	
,, 6th.	,,	,,	21,040.	
,, 7th.	,,	,,	21,560.	Operation, pus evacuated.
Aug. 13th.	,,	,,	10,240.	
,, 21st.	,,	,,	6,560.	

Case 3. *Appendicitis with complicating Suppurative Parotitis.*—J. C., æt. 26; admitted with localised suppuration around appendix. Abscess opened and drained on day of admission. Bacillus coli found in the pus: no streptococci, or staphylococci. On July 19th, 20th, and 21st, much improved; temperature, normal; pulse, 95-100. July 23rd, leucocyte count 24,960. July 24th, leucocyte count 28,400; some œdema present in parotid regions. July 25th, parotids explored, but no pus found. Blood drawn gave a pure cultivation of staphylococci. July 26th, abscess opened in both parotid regions. Leucocyte count rapidly fell to 12,000.

Case 4. *Appendicitis with gradually increasing Leucocytosis. Large localised collection of pus found. Recovery.*—M. H., a single girl, æt. 16; admitted December 13th, with obscure abdominal pain; 5th day of illness. December 13th, leucocyte count, 16,240; temperature, 101·4.

Dec. 14th	Leucocyte	count,	23,360,	Temp. 100.
,, 15th.	,,	,,	21,380.	No tumour to be felt.
,, 16th.	,,	,,	22,500.	

Dec. 18th. Leucocyte count, 27,040.

,, 20th. ,, ,, 33,125. Transferred to my care. Abdominal section performed, and large collection of pus found.

Dec. 27th. Leucocyte count, 12,050. Gradual convalescence.

There can be no question as to the line of treatment, when once the actual presence of pus has been diagnosed or even strongly suspected. The various natural terminations of an abscess in connection with the appendix are all fraught with such risks to life that no delay is justifiable.

The abscess must be opened and drained. The incision is best made over the most prominent part of the local swelling if one exist, and if the abscess cavity have come in contact with, and become adherent to the anterior abdominal wall, the operation is one of simplicity. When the abscess lies at the back of the abdominal cavity or in the pelvis, every care must be taken before opening it to protect the uninfected peritoneum: and this is best done by protecting the healthy coils of intestine with absorbent sponges.

When a localised abscess has been opened in this way, the question always arises—shall a search be made for the diseased appendix, and the operation be made a complete one by its removal?

If it be removed the *fons et origo mali* is undoubtedly removed, and the operation is in a sense a more complete one than if it be left behind. But on the other hand, I feel confident that if any prolonged search be made for the appendix, recent limiting adhesions are almost certain to be torn through and there is a great risk of the suppurative process becoming generalised. I am myself strongly of opinion that no search should be made in those cases of localised abscess for the appendix. If the organ on opening the abscess is seen or plainly felt, a ligature is placed round its base, and it is excised, but no search should be made for it. The acute suppuration in it and around it, in the large majority of cases, causes its complete obliteration. In a few exceptional cases the patient may have some months afterwards a second small collection of pus under the seat of the first operation. I myself have had one such case out of 24 localised abscesses which I have opened and drained; but in the vast majority of cases the patient is permanently cured.

The abscess cavity is allowed to empty itself, and if it is a very large one and contains very offensive pus it may be irrigated with extreme gentleness. It is then drained and allowed to granulate up from the bottom. This it usually does in some five or six weeks, though in some few cases a sinus may remain for a few months.

When the diseased appendix is situated to the outer side of the cæcum or behind it, pus when formed in connection with it has a great tendency to track up behind the colon towards the liver, and I have opened such an abscess in the right hypochondrium. When the main swelling is to the outer side of the cæcum and colon, it is often advisable to make the opening above the iliac crest in the loin, and we can thus sometimes tap the cavity without opening the general peritoneal cavity.

In the same way when the abscess is entirely pelvic it may be opened through the rectum or through the vagina (in women). These openings have the advantage of being dependent. But in the case of the rectum we are apt to leave the patient with a troublesome internal fistula.

In the Fulminating Class of Appendicitis, where, without warning, sudden gangrene of the appendix takes place, or a sudden perforation of the organ occurs before any limiting adhesions have had time to form, the case is a desperate one from the very commencement; unless operation be undertaken within a few hours of the perforation, the case is hopeless.

When on opening the abdomen the whole peritoneal cavity is found in a state of acute inflammation, and a thin foul-smelling fluid is found filling the pelvis, bathing all the coils of intestine, and even the liver, stomach and spleen, we shall seldom succeed in saving our patient's life.

These cases are fortunately rare, forming perhaps not more than 2 or 3 per cent of the total number of cases..

On the prompt recognition of the condition of things hangs the patient's life. Every minute is of value. There can be no waiting to see if the symptoms abate. The case resembles in its gravity one of sudden perforation of the stomach, though the fluid which is poured out into the general peritoneal cavity is, if possible, even still more irritating. The patient may have previously had several slight warnings in the shape of pain in the appendical region. If the previous attacks of appendicitis have been severe, adhesions are as a rule left behind, and these, if perforation occur in a future attack, usually limit its spread.

The symptoms in a typical case are all alarming in their severity. All the general constitutional symptoms point to an extremely severe attack, while the local symptoms are often ill-marked. The temperature may rise as high as 103° or 104°, and may remain continuously high till the end, or may drop to normal or subnormal, and remain so. The pulse is more rapid than in an ordinary attack. Its frequency increases daily, and towards the close of the case is almost uncountable. The vomiting is frequent, the tongue becomes dry and brown, sordes collect about the lips and gums, and delirium is often present at night.

While these constitutional symptoms all point to a very severe infection, the local ones may be very ill marked. The abdomen is generally tender and painful, but no definite tumour can be made out. Distension, due to paresis of the intestinal walls, is usually an early symptom, and tends to increase. The bowels as a rule are constipated, but in some cases a septic diarrhœa sets in. The patient is, in fact, being rapidly poisoned by toxins absorbed from a general septic peritonitis.

Attention to the number of leucocytes in the blood of such a patient will frequently help us. A high degree of leucocytosis with a rapid and increasing pulse rate is a strong indication for immediate operation.

Unfortunately the prognosis is very bad, even when the operation is undertaken early. On opening the abdomen in such a case, the appendix—perforated, and in a state of acute inflammation, or even gangrenous—is as a rule easily found, and should be removed after ligature of the base, as there are no limiting adhesions.

The question of cleansing the abdominal cavity in these cases is a difficult one, as the patient's condition is frequently so bad as to preclude any prolonged exposure, and manipulation of the abdominal contents. A second opening should be made low down in the linea alba, and the abdominal cavity thoroughly flushed with large quantities of normal salt solution. The fluid must be made to reach all parts of the abdominal cavity, special care being taken to cleanse the hepatic and renal regions, and to thoroughly irrigate the true pelvis. The abdomen then is rapidly sponged dry, and several drainage tubes left in, one of which passes to the bottom of Douglas' pouch.

It is very difficult to form an estimate of the true mortality of all cases of appendicitis. The majority of one's cases are of course culled from one's hospital experience, and statistics founded solely on them would show a considerably higher mortality than one founded on private cases. Many of the less severe cases amongst the poorer class of patients recover without seeking medical aid at all, and when medical aid is called in, if the case undergoes resolution, one hears no more of it. It is only when pus has actually formed, or when sudden perforation has taken place, that the patient is admitted, to the surgical side, at any rate, of one of our hospitals.

Statistics drawn from my own cases, 91 in number, illustrate this point. The majority of my non-suppurative cases have been seen in consultation outside the hospital, while among my cases admitted to hospital, no less than 67 per cent. had pus present when admitted, either as a localised abscess or as general peritonitis. Yet the percentage of cases of appendicitis which go on to suppuration, in all probability does not exceed 25 or 30 per cent.

I append a list of all my cases of Appendicitis treated up to the present time, arranged in five distinct groups.

ANALYSIS OF NINETY-ONE CASES OF APPENDICITIS

UNDER TREATMENT.

CLASS I. Non-Suppurative Cases, which underwent complete resolution under a purely medical treatment - 21 cases

CLASS II. Cases with Localised Peritonitic Abscess - 25 ,,
2 Deaths. 24 Recoveries. Mortality, 8 per cent.

CLASS III. Cases with a Localised Paracæcal Abscess - 4 ,,
No Deaths. Mortality, Nil.

CLASS IV. Cases with General Septic Peritonitis - 14 ,,
11 Deaths. 3 Recoveries. Mortality, 78·8 per cent.

CLASS V. Cases of Relapsing Appendicitis, operated upon during a quiescent interval - 27 ,,
1 Death. 26 Recoveries. Mortality, 3·7 per cent.

CLASS II. *Cases with Localised Peritonitic Abscess.*

No.	Date.	Sex.	Age.	REMARKS.	Result
1	July, 1892	M.		Abscess in true pelvis. Appendix not seen.	C.
2	May 4, 1894	M.	12	Small fæcal fistula remained for three months; small concretion then discharged.	C.
3	Jan. 28, 1898	M.	22	Appendix not removed.	C.
4	April 27, 1898	F.	20	Very large abscess cavity. Flushed at operation. Appendix discharged entire as a slough.	C.
5	Oct. 4, 1898	M.	12	Abscess cavity tracked behind colon. Fæcal concretion in abscess cavity.	C.
6	Oct. 29, 1898	M.	16	Fæcal concretion in abscess cavity. Appendix removed.	C.
7	Dec. 8, 1898	M.	17	Died three weeks later from intestinal obstruction due to extensive adhesions.	D.
8	Aug. 17, 1899	M.	18	Appendix removed. Convalescence very slow.	C.
9	Aug. 24, 1899	M.	32	Appendix came away during convalescence as a slough.	C.
10	Dec. 13, 1899	M.	8½	Large abscess cavity irrigated.	C.
11	Nov. 17, 1899	F.	6	Six previous attacks.	C.
12	Dec. 7, 1899	M.	16	Very large pelvic abscess. Suppurative parotitis during convalescence.	C.
13	April 1, 1900	M.	22	Sinus remained for six months, then it closed soundly healed.	C.
14	Nov. 14, 1900	M.	18	Pneumonia of right lung also present.	C.
15	Dec. 20, 1900	F.	16	An ear of corn discharged from abscess cavity.	C.
16	Feb. 27, 1901	F.	35	Abscess on outer side of cæcum. Small secondary abscess formed in 1901.	C.
17	Feb. —, 1901	F.		Abscess cavity on inner side of cæcum.	C.
18	April 3, 1901	F.	25	Third attack. Pus in the true pelvis.	C.
19	April 27, 1901	M.	23	Progressed well till June; then died of general peritonitis.	D.
20	May 22, 1901	F.	45		C.
21	June 18, 1901	F.	37	Second attack. Peritonitis rapidly extending.	C.
22	July 12, 1901	M.	11½		C.
23	Aug. 15, 1901	M.	13	Very large abscess. Fæcal concretion found in the abscess cavity.	C.
24	Nov. 6, 1901	M.			C.
25	Jan. 3, 1902.	M.		"Many" previous attacks. Fæcal fistula for three weeks.	C.

No.	Date.	Sex.	Age.	REMARKS.	Result.
1	May 13, 1898	M.	16	Abscess behind colon. Opened from front. Appendix removed.	C.
2	May, 1899	F.	17	Appendix removed.	C.
3	Oct. 19, 1900	M.		Abscess opened from loin. Sinus remained. Appendix subsequently removed for fæcal fistula.	C.
4	Feb. 4, 1901	M.	19	Large abscess cavity opened and drained from right loin.	C.

CLASS IV. *Cases with General Septic Peritonitis.*

No.	Date.	Sex.	Age.	REMARKS.	Result.
1	Sept. 3, 1893	M.	19	Abdomen flushed and drained. Death on 5th day.	D.
2	Nov., 1893	F.	16	Appendix removed. Abdomen flushed and drained. Died of septic pneumonia of right lung, 5th day.	D.
3	April 27, 1895	M.	18	Appendix removed. Abdomen flushed and drained. Death on 8th day from septicæmia.	D.
4	Oct. 15, 1896	M.	7	Patient moribund. Appendix gangrenous. Septic pleuro-pneumonia.	D.
5	Jan. 29, 1897	M.	8	Abdomen flushed and drained. Death 12 hours after.	D.
6	March 31, 1897	M.	16	Gangrenous appendix removed. Abdomen flushed and drained. Apparently moribund for 5 days afterwards.	C.
7	June 19, 1898	M.	26	Several pints of fluid in abdominal cavity.	D.
8	Dec., 1898	F.	9	Gangrenous appendix removed. Abdomen sponged clean and drained.	C.
9	May 24, 1899	F.	10	Abdomen flushed and drained. Death 36 hours afterwards.	D.
10	July 18, 1899	M.	26	Double suppurative parotitis during convalescence.	C.
11	August 13, 1899	M.	29	Abdomen flushed and counter openings made. Appendix removed.	D.
12	Oct. 12, 1900	M.	23	Abdomen flushed and counter openings made. Death 48 hours afterwards.	D.
13	May 21, 1901	M.	13	Death from septic pleuro-pneumonia.	D.
14	Dec., 1901	M.	13	Perforated appendix removed. Abdomen flushed. Death 4 days afterwards.	D.

CLASS V. *Cases of Relapsing Appendicitis.*

No.	Date.	Sex.	Age.	REMARKS.	Result.
1	Mar. 4, 1896	M.	18	Four previous attacks. Appendix kinked and fixed by adhesions. Removed.	C.
2	Oct. 16, 1896	F.	28	Many previous attacks. Uterine appendages previously removed. Appendix much thickened.	C.
3	Dec. 8, 1896	M.	8½	Seven previous attacks. Appendix fixed to anterior abdominal wall, and distended at its apex	C.
4	Mar. 29, 1897	M.	33	Continuous invalidism for 15 months previously. Appendix doubled up and adherent to cæcum.	C.
5	May 8, 1897	M.	22	Two previous attacks.	C.
6	May 15, 1897	F.	21	Attacks frequent for 6 months. Small abscess around appendix, which set up general peritonitis.	D.
7	May 29, 1897	M.	46	Four previous attacks. Appendix distended with muco-pus.	C.
8	Nov. 2, 1897	M.	10	Appendix acutely kinked, extremely bulbous.	C.
9	April 19, 1898	M.	11	Appendix matted to intestines and abdominal wall.	C.
10	May 13, 1898	M.	16	Small abscess around appendix ; gauze drain afterwards.	C.
11	May 20, 1898	M.	38	Six previous attacks. Appendix coiled upon itself.	C.
12	May 20, 1898	M.	25	Many previous attacks. Appendix in true pelvis.	C.
13	May 24, 1899	M.	18	Four previous attacks. Appendix sessile in cellular tissue behind colon.	C.
14	Aug. 26, 1899	M.	15	Appendix in true pelvis. Torn through during removal.	C.
15	Mar. 10, 1900	M.	21		C.
16	May 11, 1900	M.	32	Three previous attacks. Small ulcerated opening also found leading into cæcum.	C.
17	Dec. 14, 1900	M.	23	Three previous attacks. Appendix much thickened.	C.
18	Jan. 11, 1901	M.	23	Appendix measured 7 inches.	C.
19	April 10, 1901	M.	8	Small abscess present. Much omentum also removed. Gauze drain.	C.
20	July 5, 1901	F.	37	Appendix adherent in pelvis. Part of organ left behind.	C.
21	July 19, 1901	M.	13	Four previous attacks.	C.
22	Aug. 9, 1901	M.	26	Fæcal fistula remaining after abscess had been opened. Appendix removed.	C.
23	Sep. 6, 1901	M.	16	Tight stricture of lumen with dilatation of distal end of appendix.	C.
24	Dec. 17, 1901	F.		Two previous attacks. Appendix 7 inches long.	C.
25	Jan. 24, 1902	M.		Invalidism for 4 months. Lumen of appendix entirely destroyed.	C.
26	Feb. 8, 1902	M.		Three previous attacks. Appendix acutely kinked by adhesions.	C.
27	Feb. 14, 1902	F.		Several previous attacks.	C.

RECTAL CARCINOMA, AND THE PROLONGATION OF LIFE BY COLOTOMY.*

BY F. V. MILWARD, M.B., B.C. CANTAB., F R.C.S., ENG.

Mr. President and Gentlemen,

The question of cancer of the rectum has occupied the attention of many writers, by whom the subject has been dealt with very fully. It would be almost impossible for me to say anything new about the disease in this paper, and I am therefore not attempting to do so. One object that I have had in view, however, has been to try and follow up those cases of rectal carcinoma, which came under my personal notice, while I occupied a three years' appointment at the General Hospital (Birmingham). The endeavour to find out what eventually became of them, has, I fear, not been attended with the success that I could have wished for. Such as it is, I will speak of it later.

At first sight the rectum is apt to strike the observer as one of the least interesting parts of the anatomy, both from a sentimental, an artistic, and a surgical point of view. And yet I think it can be safely said that the tissues comprised by it, and the anus, and adjacent parts, are as often diseased as almost any other portion of the human frame.

Affecting this area there are many lesions, such as hæmorrhoids, fissures, rectal abscesses, fistulas, and the like, which, while causing the greatest inconvenience, pain, and distress, are by no means dangerous to life. Be the case one of fistula, what greater worry can a man have? Be it one of pruritus ani, what more maddening complaint can he endure? Be it a fissure, what more intense pain can he suffer, in proportion to so small a lesion? And be it a case of paralysis of the sphincter, the position is unenviable alike for the patient, and his friends.

Besides this, only a minimum of friendly sympathy must be expected by the victim, on account of the peculiar nature and position of the part in question.

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* A Paper read before the Birmingham and Midland Branch of the British Medical Association.

All these, however, are trivial complaints, and sink into insignificance when compared with carcinoma, a disease which seizes mankind practically at any age when affecting the rectum, and which, in the vast majority of cases, terminates his existence after the greatest suffering in from one to three years.

Primary carcinoma of the rectum is in all cases a growth of the adenoid type, which commences in the epithelial cells of the mucous membrane. A tumour is produced whose histological structure is a bad imitation of the rectal mucous glands. The growth is usually situated two to four inches from the anus, and having once commenced its existence quickly assumes one of three forms—either a cauliflower mass, an excavated ulcer, or a plaque extending under the mucous membrane, which for a time may be felt to move freely over it.

As the new growth increases, a considerable amount of irritation is set up in the surrounding tissues; and at the base of the diseased mucous membrane one can see microscopically, that the infiltration of leucocytes is taking place. This is followed by the production of young connective tissue, and in due course by the contraction of the base of the growth. The contracting submucous tissue tends to push the fungating, or ulcerating tumour into the lumen of the bowel, and the growth itself as it progresses shows a great tendency to encircle the bowel wall. Thus a stricture is produced, the obstruction being aided in many cases by the exuberant mass blocking up the lumen.

The production of new growth, and its attendant contraction, are prominent features in most types of carcinoma. And a third factor which has a very important influence on the clinical course of cases, and which occurs somewhat later, is ulceration. I wish to point out here, that ulceration which is of such deadly significance in cancers as a rule, may have one compensating advantage when the rectum is the part diseased, for as the contraction increases, obstruction may be averted, and the lumen preserved by this means.

These three factors then, viz., the production of new growth, contraction, and ulceration, are responsible for the main macroscopical and clinical symptoms of rectal carcinoma. Cases, to be sure, will differ vastly in the course that they run, and symptoms change as the disease progresses, but so will these three factors differ in predominance. In one man, the excess of new growth will produce rapidly increasing obstruction, terminating possibly acutely, or by a big hæmorrhage, as the fungating mass, with its thin-walled vessels, is torn through or sloughs away.

In another, the slow contraction produces chronic obstruction, leading to alternating constipation and diarrhœa, with the occasional discharge of blood and mucus.

In a third, where the growth has become ulcerated, a fairly free passage has perhaps been established, and the chief symptoms are pain and a more frequent discharge of blood and mucus. The tenesmus set up in these cases is very distressing. The ulcer produces blood and serum, and the irritated mucous glands in the neighbourhood discharge their contents into the lumen of the gut, already overloaded, perhaps, above the stricture with fæcal contents. The presence of this matter naturally calls into play the expulsive mechanism of the rectum, and the desire to go to stool is only frequently succeeded by the disappointment of failure. But the anal skin will not tolerate for long the irritating discharge, and subsequent cleansing process, which is too often performed with septic and most improper material, and the excoriation which follows, still further aggravates the state of affairs. Added to this there is the soiling of linen, the frequent attendance at the closet, the straining and disappointment that takes place there, the pain, the sense of weakness, the loss of appetite, and the steady decline in health which together contribute to make the patient's existence a wretched one.

I have mentioned that ulceration of the growth may be beneficial from one point of view, that of keeping the lumen of the gut unobstructed, but one must not forget that dangerous hæmorrhage and septic absorption may arise from this very reason. Later, ulceration, either at the site of the stricture, or the distended part of the gut above may cause fæcal abscess, and fistulæ communicating with the bladder, urethra, vagina, uterus, colon, or small intestine. Finally, it may cause perforation into the peritoneal cavity and fatal peritonitis.

The secondary glandular deposits of the malignant growth are, as a rule, comparatively early in rectal carcinoma, different cases no doubt varying. This secondary deposit is not so early perhaps as in the case of the stomach, but I think I am right in saying that in ileo-cæcal disease it is distinctly later.

Removal of the cancerous cæcum has recently been performed several times in Birmingham most successfully. And if I may venture on an explanation of the comparative difference in time in secondary gland infections in intestinal carcinoma, I think it will be admitted in the first place, that this secondary gland infection is in direct proportion to the malignancy or rapidity of growth of the primary tumour. Also that malignancy is not infrequently in direct proportion to functional activity. I do not say that because an organ is functionally active, that therefore malignant disease affecting it must needs be very malignant. But the fact that the blood supply is increased in active organs, seems to favour the rapid growth of cancer. Hence, I take it, the more rapid growth in pregnant uteri, and lactating breasts, and in the young rather than in the old. And this also may explain the greater malignancy of gastric over rectal carcinomata.

But an additional factor is required to explain why growths of the cæcum are comparatively mild in degree. The cæcum is a far more isolated organ than the rectum. It is attached to the abdominal wall merely by a double fold of peritoneum, and some loose subperitoneal tissue. The rectum, on the other hand, is supported by and intimately attached to the pelvic diaphragm. The latter soon becomes involved in the disease, and helps to bring about the secondary deposit through its own lymphatics.

In addition to lymphatic implication, the secondary deposits of rectal carcinoma are most commonly found in the liver, but I must omit any further discussion of them here.

The diagnosis of a typical malignant ulcer of the rectum should present no difficulties if within reach of the finger. On introducing the finger into the bowel, and feeling the irregular hard raised edge of the ulcer, and possibly the ring-like constriction, or the brittle, bleeding, and fungating mass, the nature of the disease will at once be suspected.

There are, however, a good many conditions which have been mistaken for rectal carcinoma, and a few for which rectal carcinoma has been mistaken. Fibrous strictures should not be difficult to differentiate. They result from trauma, and from simple, infective, or granulomatous ulcers, which have healed, or are slowly healing. The smooth surface and sharp crescentic margin, and the comparatively small proportion of hæmorrhage, pain, and mucous discharge that they cause, and the history of old disease, if obtainable, will help to diagnose the case. Previous history of syphilis is, however, notoriously difficult to obtain in women.

In fibrous stricture, the part of the bowel below the constriction is often the seat of polypi and fistulæ. The same occur in malignant disease, and fistulæ are not infrequent towards the final stages. In comparing these fistulæ with those arising in urethral strictures, it has been shown that the mucous opening, arising as it does in the ulcerated area, is below, or at the site of stricture in the rectum, while in the urethra it is in the distended part above the stricture.

There should be no difficulty about the diagnosis of simple pedunculated polypi, and simple adenomata, occurring as they most often do in young children. At the same time, when the lesion for diagnosis is a growth, the early age at which cancer attacks the rectum should not be lost sight of. A more difficult matter for diagnosis is no doubt the villous tumour, which affects both young and middle-aged adults, but is certainly rarely met with. It grows from a broad pedicle, or is sessile. The frequent hæmorrhages to which it gives rise, and the consequent anæmia may cause grave anxiety and unfounded suspicions of cancer, both to the patient and his medical adviser. The difficulty is by no means always solved by its free removal, and microscopic examination. Not a few such growths after clinical investigation, and a thorough inquiry, both before and after removal, have been pronounced benign, and nothing malignant has been found about their structure. Yet recurrences have afterwards taken place of a growth undoubtedly cancerous in nature. In an adult of middle age, I should always have grave suspicions of a rectal tumour of a papillomatous or polypoid nature, however innocent were its appearance and symptoms, and would always give a guarded prognosis.

Besides simple strictures, polypi, and villous tumours, the following have also been found to simulate rectal carcinoma: simple, tubercular, dysenteric, and gummatous ulcers; sarcomata; intussusceptions; foreign bodies; scybala in neighbouring coils of intestine; enlarged prostates; displaced uteri; and growths from other pelvic organs or the pelvic wall.

Before leaving the subject of diagnosis, a few words must be said about growths out of reach of the finger. An average finger can explore four inches of the rectum, and rather more if the patient stands up, and bears down, while in nervous and sensitive patients an anæsthetic will greatly help. By abdominal manipulation, especially in thin subjects, it is possible to feel tumours of the descending colon and sigmoid flexure, but scarcely of the rectum itself. Where there is much distension of the colon with flatus and fæces, manipulation in the left iliac fossa is impossible, and if symptoms are not very urgent, time may be spent in trying to relieve the obstruction by enemata, and suitable diet and rest. Should the distension be so relieved, one is usually able to manipulate any tumour of the colon, with the help of an anæsthetic, and frequently without one. The rectum being nine inches in length, its upper four inches is the only portion of the large intestine in which a tumour cannot be detected *per anum*, or by abdominal manipulation. If while the abdomen is relaxed, no large intestine tumours can be felt, and the other symptoms point to rectal carcinoma, it would be safe to open the gut in the left iliac fossa, *i.e.*, perform a left inguinal colotomy, taking the precaution to manipulate the first part of the rectum through the wound to substantiate the diagnosis.

But the treatment of obstruction with distension where no growth can be palpated is attended with more difficulty. The older method was to perform lumbar colotomy on either side, according to circumstances. The result was that frequently the peritoneum was opened, the colon sometimes not found, while occasionally the obstruction was not relieved. Lately it has become the practice in these cases, to explore the abdominal cavity by a median incision below the umbilicus, when the bowel can be emptied through a Paul's tube, and the exact relations of the obstruction can be easily ascertained, and dealt with accordingly.

The concluding remarks in this paper will be the recital of a few facts, which I have gained by looking up all the cases of carcinoma which were treated in the General Hospital during 1898, 1899, and 1900, particular regard being paid to rectal carcinoma. During this time, 317 cases of carcinoma, epithelioma, and rodent ulcer were admitted, nearly all of which came under my personal supervision. Taking the four principal parts of the body affected, I find that they were as follows:—The breast, 75 cases, or 23 per cent. of the whole; the rectum, 49 cases, or 15 per cent. of the whole; the mouth (including the lips, tongue, tonsils), 36 cases, or 11 per cent. of the whole; and the uterus, 29 cases, or 9 per cent. of the whole.

Thus, after the breast, the rectum is the second commonest place, and in the previous three years there were 57 cases, as against the 49 I have just quoted. Inoperable cases in the mouth, breast, and uterus, are not admitted. Those in the rectum can be colotomied, and thus their proportion is perhaps increased. Going back for nearly six years, I have collected 100 cases of rectal carcinoma, and of these I find that 70 occurred in males and 30 in females. The proportion is usually reckoned by most authors to be equal.

Carcinoma attacks the rectum not infrequently at a very early age, and I thought it would be of interest to tabulate the number of cases with the respective decades in which they occurred.

Thus in the 100 cases from the

11th—20th year there were 2 cases, both at 18
21st—30th ,, ,, 5 ,,
31st—40th ,, ,, 19 ,,
41st—50th ,, ,, 19 ,,
51st—60th ,, ,, 37 ,,
61st—70th ,, ,, 16 ,,

and from the 71st year upwards there were 2 cases at 71 and 72.

Though I do not wish to weary you with statistics, I must ask you to allow me to give a table showing the comparative frequency of carcinoma in the various parts of the alimentary canal. Compared with the 100 cases of rectal disease admitted during the six years, there were of the mouth 86 cases, including disease of the lips, tongue, floor of mouth, and tonsils; pharynx, 5 cases; œsophagus, 36 cases; stomach and pylorus, 28 cases; small intestine, 1 case; large intestine, 32 cases; and anal margin, 2 cases. Diseases of the mouth, pharynx, œsophagus, and anus, would be of the squamous celled type, that of the stomach intestine and rectum of the columnar celled type.

I have endeavoured to follow up 36 cases which were admitted to the hospital between June, 1898, and the end of 1900, a period of two and a half years. Nearly all these cases were treated by inguinal colotomy, and I have not included those treated by excision of the rectum, since the discussion of this matter is not touched on here.

Before giving details I should add that the numbers are so few, that I cannot pretend that they are of any use from a statistical point of view. I would have extended my inquiries to a remoter period, had I not found that it was exceedingly difficult to obtain answers from persons who had left hospital more than two years, or from their friends. If the numbers are somewhat scanty, they may yet serve to direct one's thoughts in the right direction, and to indicate in some degree the value of surgical interference in this disease in prolonging life.

The information gained was simply this. Out of 20 cases who replied, 3 had refused operation in the hospital, and they lived four, nine, and eleven months respectively after leaving it. Out of 17 cases in which colotomy was performed, 3, worn out by emaciation and exhaustion before admission, died in hospital, twenty-five, twenty-six, and thirty-six days after colotomy; 11 died at home at the following periods after operation, 1 at one month, 3 at four months, 3 at six months, 2 at seven months, 1 at eight months, and 1 at twelve months; 3 are still alive at seventeen, eighteen, and twenty-three months respectively.

Of these three, the first, a woman, æt. 56, passes blood, and sometimes fæces *per anum*, is a martyr to pain, and "prays" to die.

The second, a man, æt. 30, has had symptoms of carcinoma for two and a half years, and has been colotomied for eighteen months. The growth is now involving the anus, and protruding from it. When I last saw him, four months ago, he could do his day's work, could walk about briskly, and did not look very cachectic. He was troubled by pain and hæmorrhage, but not I should say severely, and he obtained much relief from morphia suppositories. He wrote to me last week that he was in much the same condition.

The third surviving case, a man, æt. 42, colotomied now twenty-three months ago, wrote to me last week that the operation continued to act pretty well, that he was sometimes better and sometimes worse, and that occasionally he had very bad turns with much pain and discharge.

These figures do not point to any great benefit to be derived from colotomy as far as time goes, with the exception of the last two. Three only out of seventeen survived more than twelve months. One must not forget that the poor man puts off treatment as long as possible, and does not care to give up work while he finds it possible to continue it. His conditions of life after operation also are far removed in degree of comfort from those of the rich man. Still, I venture to think that the expectation of life after colotomy is nearer the mark I have given, than the two or three years one hears so constantly quoted as being the regular thing.

Quite a number of cases of rectal carcinoma live their appointed time, and die of exhaustion, without the need of surgical interference to relieve obstruction. Whether they can in all cases be benefited by the diffluence of their intestinal stream through an artificial anus, and whether this, while prolonging their existence, gives them more happiness and comfort, is a matter of some debate.

In the case of a palliative operation performed for a fatal disease, the thing to be considered is the relative degree of comfort to be obtained. We must weigh the discomfort, pain, and danger attending the time under treatment, and the inconvenience as in these cases of the colotomy wound, with the few months to be gained in existence—that existence being at the best, probably, but a miserable substitute for healthy life. But after all, one cannot deny that in most cases the physical suffering in unrelieved carcinoma of the rectum, is immeasurably greater than when colotomy has been properly performed.

Patients, especially those of the better classes, shrink from the idea of an artificial anus when it is explained to them. Many consider that life will be unendurable under these conditions, and it is the mental rather than the physical pain that troubles them. Colotomy should, however, be urged in nearly every case, and that this is the correct line of treatment can be vouched for by most medical men. On the one hand we have the regular and painless relief of the bowels through the colotomy wound, and a death from exhaustion. On the other hand we have the man whose incontinent sphincter is continually discharging blood, slime, and fæces, or who is suffering from recurring obstruction, which at any time may terminate his existence in a very painful manner. Perhaps it should be added that fistulous communication with the bladder, and growth involving the sacral plexus and pelvic walls, is likely to be more common after colotomy. Certainly, if this is the case, the benefit acquired by the prolongation to life is more or less cancelled by the agony of this very distressing complication. Our patient were better dead than comatose from morphia, and when we hear him praying to die to obtain relief, we may honestly ask ourself what benefit, if any, he has derived from surgery. Fortunately, I believe that patients who do not derive a great, if not a vast amount of relief from colotomy, are rare, and therefore I re-affirm my statement that the operation should be urged in nearly every case.

Before closing this paper I wish to draw attention to the fact that many patients and their friends are under the impression that the palliative operation is a radical one. To many of the lower classes it is quite impossible to explain the difference. They consider that an operation can only be for one purpose. that of curing, and should a patient succumb afterwards, it is usually the operation that killed him.

Several relatives and friends of old patients have written to me such answers as the following: "The operation did him no good"; "it did not cure her"; and again, "she got worse and worse after it"; all of which seemed to show the operation was blamed for the subsequent suffering, and sometimes for the fatal termination.

MEDICAL ABSTRACTS.

REPORT ON RENAL AND URINARY DISEASES.

BY PROF. ROBERT SAUNDBY, M.D., M.SC., LL.D., F.R.C.P.

DIABETES.

Lépine, R. *Traitement du Diabète Sucré.—La Semaine Médicale*, 1901, p. 361.

After passing in review such points as the need for the careful study of the habits of each patient, the exact determination of the total quantity of urine excreted in twenty-four hours, of the relation of the total sugar to the total urea, the presence of albuminuria, acetonuria, diaceturia, Prof. Lépine proposes to classify diabetes for treatment into (I) cases of diabetes not having diacetic acid in the urine, which he further divides into (*a*) those in which the glycosuria disappears on strict diet, and (*b*) those in which the glycosuria is only diminished after strict diet; and (II) cases of diabetes with diaceturia, also divided into (*a*) where the diacetic acid disappears under appropriate treatment, and (*b*) where it persists in spite of treatment, a prognostic sign which is nearly always fatal.

The group of cases which he classes under I*a* require for their treatment solely a diet which is sufficient to maintain nitrogenous equilibrium. He recommends that for a few days the patient should be allowed to vary his ordinary diet before being put upon any strict regimen, and states that when such a patient has been placed upon anti-diabetic diet for a few weeks, he will have recovered a considerable amount of his capacity for assimilating carbohydrates, and may be allowed to resume the consumption of such quantities as a few experiments show him to be capable of assimilating without inconvenience; this result, however, is one which undergoes fluctuations, and it is highly desirable that such cases should continue under medical supervision and guidance.

The group I*b* is more difficult to manage, and one is tempted to put them upon strict meat diet, but Prof. Lépine regards this as being dangerous on account of its tendency to irritate the kidney and to develope the acid dyscrasia. Without going so far as to admit the existence of renal diabetes, he recognises that albuminuria dependent upon renal irritation is often present in diabetes, and constitutes a source of danger by favouring the occurrence of diabetic coma, and he believes that a kidney so irritated may become more permeable to sugar and permit an excessive excretion of glucose. He also regards the use of fat in large quantity as not free from danger, because it may be a source of the production of acetone.

In group II, Prof. Lépine is not very clear how he would differentiate them into his classes (*a*) and (*b*). He admits that the addition of carbohydrates to the diet is often followed by the diminution of the diaceturia, but he objects to this plan, as it invariably increases the glycosuria and is injurious to the patient. He refers to the suggestion of Schultzen, who recommended the use of glycerine for this purpose, but adds that unfortunately experience has not borne out the validity of Schultzen's theory. He then draws attention to a recent paper by Schwartz (*La Semaine Médicale*, 1901, p. 150), who recommends a derivative of glucose, gluconic acid, that is to say, glucose already in part oxidised, which should diminish diaceturia better than glucose by completing its combustion in the economy of the diabetic. If this fact were well established we should possess the means of making up to the diabetic the loss due to the non-destruction of glucose. A case has been recently recorded by Schwartz (*Prag. Med. Wochensch.* July 25th and August 1st, pp. 361 and 376) which suggests that gluconic acid has such value. It was that of a young man, twenty-eight years of age, who was suffering from severe diabetes with pulmonary phthisis. During the six weeks he was in the hospital at Prague he underwent three attacks of diabetic coma with increased excretion of acetone dependent upon dyspnœa. On the first occasion after he had lost consciousness he was given 70 grammes (2⅓ oz.) of gluconic acid in half a litre of water neutralised by bicarbonate of soda and 140 grammes (4⅔ oz.) of the latter salt by the mouth and bowel. Although the urine was still acid consciousness returned, the dyspnœa disappeared, and the patient remained better for three weeks, but after an increased quantity of fat in his diet—600 grammes (20 oz.) of beef fat in three days—the acetonuria returned, and there was a second attack of coma with dyspnœa. Five hours after the commencement of this fresh attack 50 grammes (1⅓ oz.) of gluconic acid were administered in alkalinised water. This treatment was again followed by recovery, which lasted fifteen days, when coma again supervened, and as there was no gluconic acid available the patient was treated exclusively by bicarbonate of soda, but died on the third day.

The case is interesting although it is not in itself sufficient to prove the value of the remedy, yet, in face of the fact that diabetic coma is one of the most fatal of complications, it is highly desirable that supplies of this substance should be available, and that it should be given a trial when opportunity arises.

Mossé, M. A. *The Potato Cure of Diabetes and Diabetic Complications.—Bulletin de l'Académie de Médecine*, 1901, No. 41, p. 769.

The author classifies the various forms of carbohydrates in relation to diabetes into (1) injurious; (2) useful; (3) doubtful. He places potatoes in the last class, for in spite of what has been said in their favour by many medical authorities they are generally excluded from diabetic dietaries in France as well as abroad, and in France those who do allow them only give from 100 to 200 grammes (from 3 to 10 ounces) daily. He believes that he has proved that potatoes are not only permissible, but may be with great advantage substituted for bread in sufficiently large doses to take the place of the latter, that is to say, in the proportion of 2 to 3 times the weight of potatoes to 1 of bread. The amount employed by him has varied from 1 to 1½ kilog. (2 to 3 lbs.) daily. He claims that upon this diet he has seen rapid diminution of thirst, polyuria, and glycosuria with corresponding improvement in the general condition. He prefers to give potatoes cooked by baking. In 19 out of 20 cases where they have been used the result has been more or less favourable. He gives the following comparative table to show the chemical constitution of bread and potatoes respectively:—

	Water.	Albuminoids.	Fats.	Carbohydrates.	Salts.
Paris bakers' bread	36·5	7	0·2	55·3	1
Potatoes .	73	2·80	0·2	23·2	0·8

The cases related are with one exception very brief and for the most part are mild examples in elderly persons. In a case of so called "diabète maigre" in a young man, æt. 24, the effect of the potato diet is not remarkable, for example, the total sugar in two periods of bread diet was 659 and 644 grammes, while on potato it was 584 and 537 grammes; when taking both potatoes and bread it was 588 grammes. In another case of the same class in a man, æt. 47, no figures are given, but we are merely told that the result was favourable. In several cases of surgical diabetes, or at least diabetes complicated by surgical lesions, the wounds healed after the patient had potato substituted for bread. It is noteworthy that in no case is the weight of the patient mentioned, or the influence of the diet upon the body-weight given. In two cases the fæces were examined and compared, and we are told that the result was to show that the starch of the potato was as well absorbed as that of bread; the figures are given for one case, the average quantity of carbohydrates contained in the fæces for four days when the patient was taking bread being 0·460 grammes, while on potato it was 1·221 grammes; the amounts are very small, so small as to leave doubt in one's mind as to their correctness. He explains the good results of potato diet by the large proportion of salts, chiefly salts of potash; he calculates that the amount of potash salts is 4·9 grammes per kilogramme; he therefore regards the treatment as an alkaline cure. He considers that he has had better results with potato treatment than with any other method he has lately tried, including pancreatic preparations and beer yeast. He thinks each case must be watched carefully, as there may be individual idiosyncrasies which may make it unsuitable, as it appeared to be for one of his cases without any obvious reason. He suggests that it may be bad for cases complicated by albuminuria, because potash salts increase the toxicity of the blood.

After reading the paper carefully, I am not convinced that the author has shown that the action of potatoes is curative, although, compared with such a highly injurious article as bread, they are distinctly beneficial. The figures might be more convincing, and I should be glad to know the effect of the diet upon the weight of the patients; but it must be allowed that 1,500 grammes of potato contain about as much starch as 400 grammes of bread, so that if on the former diet there is diminished glycosuria and improvement in the general condition of the patient, this cannot be attributed to withholding carbohydrates, and is probably due to the different form of starch.

The superior assimilability of potato starch has been maintained by several writers, for example, I have said: "as a rule potatoes are tolerated better than an equivalent quantity of bread," but I prescribe potato in small quantities of 6 oz. daily, while M. Mossé gives 1,000 to 1,500 grammes (2 to 3 lbs.). The latter has not proved that this quantity of potato can usually be taken without being attended by a considerable amount of glycosuria, for example: in case I, the lowest point reached is 53 grammes (795 grains); in case IV, it fell to 35 grammes (525 grains); and in case VIII only did the sugar disappear completely, so that this result must be regarded as exceptional even in mild cases, while in the only severe case (case X) the effect of the change of diet was not very marked.

The communication is useful in again drawing attention to the value of potatoes as an article of diet in diabetes, especially in its milder form; and the suggestion that they may be safely given in larger quantities must be carefully tested. It is very much better to feed diabetic patients upon potatoes than upon expensive preparations which are beyond the resources of the poor, and are in most cases far from palatable. At the same time it is, in my opinion, highly desirable to put every diabetic patient, in the first instance, upon a strict diet for a time, in order to remove the excess of sugar from the blood, and even after he has been allowed potato or other carbohydrate in such form and quantity as he can assimilate it will be necessary for him, from time to time, to return for brief periods to strict diet whenever any of the old symptoms, such as thirst or polyuria, return.

Lépine and Boulud. *Destruction by the Pancreas of a Substance which hinders Glycolysis.—Lyon Médical*, No. 1, 1902.

Lépine and Boulud have extracted from the urine in diabetes and in pneumonia a crystallisable substance which causes glycosuria when injected under the skin of a guinea-pig, or introduced into the jugular vein of a dog. When a small quantity of this substance was mixed with normal defibrinated dog's blood, and the mixture kept at a temperature of 38° to 39° C. for one hour, it was found that the blood had only lost very little of its reducing power, and very little of its fermentable sugar, whilst with normal blood under the same conditions there was a marked diminution of the reducing power, and a complete, or almost complete, disappearance of the fermentable sugar. To a litre of defibrinated normal dog's blood was added a little of this substance obtained from the urine of a pneumonic patient. This blood was then passed through a large piece of isolated dog's pancreas. The blood collected from the chief vein, immediately after its passage through the pancreas, was found to have recovered its glycolytic or sugar-destroying power. It was thus shown that (1) a crystallisable substance can be extracted from the urine in various diseases (diabetes and other affections) which has the power of hindering glycolysis (or sugar destruction); (2) this substance is destroyed in its passage through the vessels of the living pancreas; (3) therefore, in addition to its other functions, the pancreas has an important antitoxic action.

Lépine and Boulud. *Upon the Estimation of the various kinds of Sugar which may be present in Diabetic Urine.—Revue de Médecine*, July, 1901.

The three methods used for determining the amount of sugar in diabetic urine (the polarimeter, Fehling's solution, and fermentation) are subject to certain causes of error due to (1) so far as the polarimeter is concerned, the presence of left rotatory substances (oxybutyric acid, glycuronic acid), or sugars more right-rotatory than glucose (maltose), or sugars which do not affect polarised light (pentose); (2) with Fehling's solution there is the unequal reducing power of different sugars, and the existence in the urine of reducing substances which are not sugar; (3) finally, as regards fermentation, the different amounts of carbonic acid gas formed by different sugars, or by the same sugar under different conditions, and the fact that some sugars are not fermentable. Where the quantity of reducing substances present in the urine exceeds greatly the amount of sugar indicated by the polarimeter it is probable that oxybutric, or glycuronic acid, or pentose, is present. If, on the other hand, the quantity of sugar indicated by the polarimeter is greatly in excess of the amount of reducing substances, the probability is that maltose is present; or, finally, as is much more commonly the case, the indications furnished by the polarimeter and the reduction of copper are about the same, from which one may conclude that the sugar present is glucose.

Munch, F. *Existe-t-il un Diabète Rénal?—La Semaine Médicale*, No. 11, p. 81.

The value of this article is mainly historical as it contains no new facts. It gives a brief account of all the papers and cases bearing upon the subject hitherto published. The author's conclusion is that so far the existence of renal diabetes has not been established, but that such cases as Lépine's prove that the permeability of the kidney plays a certain part in the elimination of sugar from the blood by the kidney, so that it is permissible to speak of a renal element in diabetes, although not of renal diabetes.

BRIGHT'S DISEASE.

Surgical Intervention in Nephritis. A discussion, which has taken place upon this subject in the Society for Internal Medicine at Berlin, is reported in *La Semaine Médicale*, February 5th, 1902.

J. Israel said that for the last ten years his attention had been drawn to cases presenting symptoms very like those of nephritic colic due to stone, which resisted all ordinary therapeutic means and required operation, but which showed the presence of inflammatory processes in the absence of stone, and were cured by operation. He attributed the good effects of nephrotomy in part to relief of tension of the kidney and also to relief of congestion. He did not pretend that the knife should be the remedy for all cases of nephritis, and denied that he had ever proposed surgical interference for Bright's disease. As to his results, out of eleven patients upon whom he had operated, six were definitely cured, in one hæmorrhage and colic recurred on the opposite side, in two the symptoms reappeared after two years, and in two the operation was without benefit. In addition there were three fatal cases not included in this list, but which occurred at a time when the surgical indications were less clear, and it was necessary to have recourse to catheterisation of the ureters and to other means of diagnosis calculated to make the operation more serious.

Klemperer defended the reality of nervous hæmaturia and quoted a case where the kidney was extirpated for abundant renal hæmorrhage, but on examination with the microscope the organ was absolutely healthy. He had never seen acute nephritis by itself produce renal colic. If this occurred it must be due to a nervous element. Israel seemed to call cases of operable renal disease, nephritis, and those that are not, Bright's disease, but Bright's disease is not always bilateral, and reciprocally simple renal inflammation is not always localised. He thought the operation not justifiable except in cases of anuria due to mechanical causes, or in the presence of pain of such intensity that the patient is prevented following his usual occupations, or where hæmorrhage was so severe as to endanger life.

Casper reported two cases of periodical renal trouble simulating nephritic colic. The attacks recurred in one case every fortnight, in the other every month, and both were cured by simple nephrotomy. Although renal tension was not proved to exist at the operation the speaker admitted that the cause of the symptoms was intermittent tension.

Zondek believed that it was very difficult if not impossible to exclude with certainty the existence of a small renal calculus even after the kidney had been laid open and incised.

Senator recognised that Israel had not proposed to operate in Bright's disease, but other surgeons who had followed in his footsteps had gone further than himself. No doubt hæmaturia occurs in acute nephritis, but neither acute nor chronic inflammation by itself will cause colic. Colic may often be due to adhesions of the kidney, and therefore excision of this organ may often effect a cure. In his opinion laying open the kidney is only justified in cases of anuria, and not for either hæmaturia or colic.

Mayet. *The Causation of Cardiac Hypertrophy by Nephritis.* —*Lyon Méd.*, January 19th, 1902.

Mayet has observed hypertrophy of the heart directly consecutive to toxic nephritis in two experiments, undertaken to investigate the pathology of cancer. Two rabbits were inoculated with an aqueous extract of macerated human cancer, after being previously treated by subcutaneous injections of cantharidine in oil, in order to determine the localisation of the malignant growth by means of a renal lesion. In neither case was any malignant growth found *post mortem*, but in both distinct nephritis as well as marked hypertrophy of the left ventricle was seen. The first rabbit, which weighed 1,885 grammes, received in five doses 1½ mg. of cantharidine between May 19th and June 1st, 1895. Albumen was found in the urine soon after the first injection, but disappeared again after the third. After a transitory loss of weight, the animal throve until December, when it showed signs of spasmodic paraplegia (due to myelitis caused by cancerous toxins) and died in January, 1896. On examination, the kidneys were increased in size and showed a uniform and gray surface on section, there being no sharp distinction between cortex and medulla. The wall of the left ventricle was much thicker than normal, being twice the normal size as seen in other rabbits of similar weight. In the second case, the rabbit was much larger, weighing 3½ kilos. The same dose of cantharidine, 1½ mg., was administered in three injections. The urine contained albumen after the first dose, but not after the third. The animal wasted rapidly and died in a state of profound cachexia. The kidneys were found in the same condition as those of the first animal, and the left ventricular wall was noticeably thickened, though not so much as in the first case. Thus a diffuse nephritis of toxic origin produced marked enlargement of the left ventricle within a few months in both instances, the duration in the second case being the shorter of the two.

Tuffier and Milian. *Hæmoglobinuria due to Toxic Action of the Urine.—La Semaine Médicale*, 1901, p. 342.

The authors describe a case of acute nephritis with albuminuria in a woman who was attacked after a grave burn; the urine contained albumen, hæmoglobin, and leucocytes. There was no hæmoglobinuria in the blood serum, while the hæmolytic action of the urine disappeared when it was heated to 120° C., and reappeared after exposure to the air. In this case, the hæmolytic action of the urine seemed to be due to its toxic properties, and not to osmosis.

Milian. *The Cyto-diagnosis of Albuminous or Hæmorrhagic Urine.—La Semaine Médicale*, 1901, p. 341.

The examination of the cells deposited by albuminuric or hæmorrhagic urines has given, in the hands of Milian, the following results: in a case of renal tuberculosis with hæmaturia, the hæmorrhage was accompanied by a marked elimination of mononuclear leucocytes and lymphocytes, whereas polynuclear leucocytes were rare; there were also a few pigmented casts. On the other hand, in an individual with epithelioma of the kidney there were no casts; there were only in addition to red blood corpuscles flat epithelial cells such as are observed in all urines. In a case of acute nephritis with hæmaturia, the urine contained a great quantity of polynuclear leucocytes. Where the albuminuria was cardiac, or due to stasis, there were no cells except red blood corpuscles. In the case of a man with subacute nephritis of unknown origin the urine contained an equal number of polynuclear and mononuclear leucocytes with a relatively large proportion of eosinophiles. Febrile albuminuria was observed to occur in two different ways; in some the leucocytes were abundant, in others they were absent. Amongst the former were cases of articular rheumatism and diphtheria; among the latter enteric fever and pneumonia. The author suggests the possibility that in the latter cases the albuminuria was merely due to stasis.

MISCELLANEOUS.

Rem-Picci, M. G. *Albuminuria following Cold Baths.—Bollet. della R. Accad. med. di Roma*, XXVII, 2.

The author finds that albuminuria is nearly constant after immersion in cold water. If the temperature does not exceed 12° C. (53·6° F.), an immersion of three or four minutes suffices to cause it, but if the temperature is from 12° to 20° C. (53·6° to 68° F.) it requires longer. Above the latter figure albuminuria does not occur. The albuminuria in all the experiments was always very slight, and consisted of a mixture of serum, albumen, and globulin, often accompanied by a few casts and sometimes, but not always, by polyuria. It came on rapidly at the end of about ten minutes, and ceased after some hours. In discussing the cause, the author does not believe that it can be attributed to an alteration of blood pressure, but considers that it is a reflex manifestation. The author considers cold baths in winter may be prejudicial to health, and thinks that they should be absolutely forbidden to every one who is not quite healthy, especially to those suspected of early renal disease.

Cramer, H. *Emulsion Albuminuria.—Münch. Med. Woch.*, January 21st. 1902.

H. Cramer describes a condition of urine which he calls "emulsion albuminuria," which he found in two cases of fatal eclampsia and in one case of fatal uræmia. The clinical histories were those of very severe cases. The urine appeared milky, was acid, and was of a yellowish brown colour. The emulsion did not disappear on filtering nor on centrifugalisation. The addition of acid as well as heating did not clear up this condition. Dilution with water and a few drops of acetic acid or liq. potassæ, however, cleared the urine of nearly all the cloudiness. Boiling produced a heavy cloud, which interfered with the emulsion. The urine contained no fat (ether-alcohol and osmic acid tests). The addition of pepsin and HCl cleared up the milky emulsion, but HCl alone did not do so. Further chemical analysis showed that the emulsion was probably due to albumen, with some allantoin and uric acid. The microscopic examination revealed small rounded bodies, varying in size, but not unlike cocci, but bacteriological culture showed that they were not micro-organisms. Cramer regards the emulsion of the albumen as the result of an excess of albumen in the small quantity of urine—fluid excreted by the patients suffering from severe eclampsia and uræmia. He suggests that the occurrence may be of considerable prognostic importance.

Klemperer, M. G. *The Prophylaxis of Oxalic Renal Calculi.—La Semaine Médicale*, 1901, p. 422.

At a meeting of the Berlin Medical Society Klemperer observed that it was very difficult to eliminate from the diet of oxaluric patients all articles of food susceptible of producing oxalic acid, as this would amount to entire abstinence from meat and vegetables. It was therefore better to try to give these patients drugs capable of dissolving this acid and consequently preventing its precipitation. With this object the speaker recommended the salts of magnesia; in addition he forbade milk, which is rich in lime but poor in magnesia, eggs, and all vegetables containing much oxalic acid: on the other hand, he allowed meat, fatty substances, dry vegetables, and starchy foods. This diet is supplemented by the administration of 2 grammes (30 grains) of sulphate of magnesia. Senator expressed his general agreement with the views of Klemperer, and said that the oxaluria of young subjects was probably explained by the milk diet which predominated at the early part of life.

REVIEWS.

THE CAUSES OF DEATH AMONG THE ASSURED IN THE SCOTTISH WIDOWS' FUND.*

Dr. Claud Muirhead's report of the causes of death among the assured in the Scottish Widows' Fund from 1874 to 1894 inclusive forms very instructive reading. The deaths are divided amongst three periods of seven years each, and are classified under thirteen headings. Only those occurring among men are considered, and they amount to no less than 9,163.

The first class includes the deaths from zymotic and contagious diseases, and it is interesting to note that these increased from 161 and 177 in the first two periods to 311 in the seven years from 1888 to 1894. This increase appears to have been entirely due to the outbreak of influenza, which was responsible for no less than 142 deaths in the latter period. During the same period the number of deaths from typhoid fever amounted to about 68. We note with surprise that the average age at time of death from typhoid fever was 42 years; but the average age of death from the specific fevers in general is still more astonishing, being but little short of 50 years. The other specific disorder to which special interest attaches is rheumatic fever, which was responsible for 58 deaths, at the average age of 41, the average age of entry of these cases into the Association being 32. Only 7 per cent. of the deceased members gave a history of inherited rheumatism; but 30 per cent. had suffered themselves from previous attacks. The report appears fully to justify the unwillingness of Insurance Offices to accept at ordinary rates applicants with a previous history of rheumatic fever.

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* The Causes of Death among the Assured in the Scottish Widows' Fund and Life Assurance Society from 1874 to 1894 inclusive. Reported by Claud Muirhead, M.D., F.R.C.P.E., Medical Officer of the Society. Edinburgh: R. and R. Clark, Limited. 1902.

The total number of deaths from cancer in the 21 years covered by the report was 539, of which 252 occurred during the last of the three septennial periods. This increase in number has been accompanied by a serious decrease in the average age at the time of death, which was 61 in the first, and 59 in each of the two later periods. Dr. Muirhead rejects the theory that the apparent increase in mortality from cancer is to be explained by greater diagnostic skill. He is inclined to recommend the non-acceptance at the ordinary terms of individuals whose family history shows any taint from this disease.

In contrast to the disease just considered, the mortality from pulmonary phthisis shows a steady diminution, not it is true in the actual number, but in the percentage of deaths recorded. At the same time, Dr. Muirhead points out that the death rate from this cause is higher than should be the case were the medical examination always as efficient as it ought to be, no less than fifteen members having died from phthisis within a year after their acceptance. Dr. Muirhead rightly urges that greater attention should be paid to such matters as increased pulse rate, cough and dyspepsia as suggestions of early mischief. A very interesting comparison is made between a series of 524 deaths from phthisis and another series of 502 from apoplexy. In only 35 per cent.of the former was there a family history, certain or suspicious, of phthisis, whereas no less than 47 of the second series gave a similar history.

We cannot follow this interesting investigation further, though it is throughout well worth a careful study. One point, however, we notice with surprise, namely, the small extent to which the mortality in this office has been traced to alcoholism. Indeed, no special consideration is given to the subject. A very important statement on this point was made two years ago by Drs. T. Colcott Fox and S. W. Carruthers, medical referees of the Mutual Life Insurance Company of New York, who traced a very large proportion of the premature mortality of that office directly or indirectly to the influence of alcohol. In the report now before us, the number of deaths directly due to alcoholism was only 22, and those due to alcoholic cirrhosis of the liver numbered only 127. We think, however, that some consideration of the effects of alcohol in causing death through other diseases, such as those of the kidneys and blood vessels, would have led to greater stress being laid upon this source of danger.

SURGICAL DISEASES OF THE KIDNEY AND URETER.*

THIS volume opens with an account of tumours of the renal pelvis, a subject which has not until quite recently attracted the attention it deserves. Such tumours are not common, but they are sufficiently common to make it essential that the surgeon, in investigating a case of hæmaturia, should constantly bear in mind the possibility of the presence of a growth in the pelvis of the kidney. The result of leaving such a tumour without due recognition and treatment is disastrous. "Villous papilloma (of the renal pelvis)," says Mr. Morris, "though histologically innocent, is clinically far from being so. It extends over a longer period than a malignant tumour, but in the end is as certainly fatal." Again, writing on the same subject, he says, "The only hope of curing the patient is by performing nephrectomy in good time."

On the subject of renal calculus, Mr. Morris speaks, of course, with great authority, and this section of the book is in every way most admirably written, and the subject is discussed in the fullest possible manner. As regards the occurrence of pain in the opposite kidney being caused by renal calculus, Mr. Morris says that, so far as his experiences and researches go, there is not a single case, which affords satisfactory evidence of symptoms on one side only being caused by a stone in the kidney of the other side. Discussing the value of radiography in the diagnosis of renal calculus, the author rightly says that the whole length of the ureter, as well as the kidney, requires to be tested, because a stone in the ureter may cause symptoms entirely referred to the kidney. On the whole, much reliance does not seem to be placed by Mr. Morris on this method of diagnosis, so far as renal calculus is concerned We notice that the author says that, in searching a kidney for calculus, an incision should be made along the convex border of the organ and that, through the wound so made, the right index finger should be introduced and a careful detailed manipulation made of every part of the interior of the organ. We have one question to ask in relation to this piece of advice, namely—Can the interior of the renal pelvis be properly searched with the finger? Looking at the form of the renal pelvis and calyces, it seems evident, as Mr. Jordan Lloyd pointed out some years ago, that the finger is not so efficient an instrument in searching for a calculus in the pelvis of the kidney, as is a child's bladder-sound. Of course, the exploration of the kidney pelvis with the finger is rendered much more easy, when the kidney is brought out on to the surface of the body, as Mr. Morris advises should be done; but this is by no means always possible.

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* Surgical Diseases of the Kidney and Ureter, including Injuries, Malformations, and Displacements. By Henry Morris, F.R.C.S. In two volumes. Vol. II. London: Cassell and Company. 1901.

We would specially commend the chapter on calculous anuria, as being an exhaustive and at the same time an interesting account of the subject. The section, too, on the operations on the kidney is excellent, as is that on the diseases of the ureter. The accounts of the plastic operations on the ureter are clear and precise, and the plates illustrating them are good, and we should advise anyone desirous of obtaining the latest information on the subject to carefully read this section.

Mr. Morris's book is worthy of the highest praise, and must for a long time remain the leading work on Renal Surgery in the English language.

LECTURES ON CHEMICAL PATHOLOGY IN ITS RELATION TO PRACTICAL MEDICINE.*

It has not often fallen to our lot to review a more thoroughly satisfactory book than Professor Herter's collection of Lectures on Chemical Pathology in relation to the Practice of Medicine. There is no question as to the need of such a book. The knowledge gained by modern research upon the chemical processes of the body in health and disease has, or should have, the most intimate bearing upon every-day medical practice. But hitherto it has been no easy matter to obtain access to any reasonably brief and connected statement of the facts, nor do we know of any book which has especially attempted to bring out the practical lessons to be learnt from their study. Dr. Herter has supplied both these wants in a very admirable manner. His lectures are sufficiently condensed to appeal to anyone who makes any attempt to keep up his medical reading; and the facts of chemical pathology—often rather dry facts under ordinary treatment—are dealt with in so interesting a fashion as to render the study of the book a very pleasant task. Finally, the bearing on practical medicine is kept constantly in view, and he would be a dull man indeed who did not gain from it many most valuable hints.

The lectures are thirteen in number, and deal almost exclusively with the chemistry and chemical pathology of the processes carried on in the alimentary tract. The first lecture, on the chemical defences of the organism against disease, is the only exception to this statement. It deals with a large number of highly important questions, such as the defences against bacterial invasion, the formation of antitoxins and hæmolysines, processes of "detoxication," and the like. To this follow four chapters on the chief food stuffs and their fate in the body in health and disease, the successive lectures being devoted to the carbohydrates and fats, the proteids, water and the inorganic salts, and finally alcohol, the organic acids of the food and tea and coffee. These lectures are invaluable for the numerous practical suggestions on the dietetic treatment of disease to which they give rise. The next four lectures deal with the subject of excessive fermentation and putrefaction in the digestive tracts and with the chemical pathology of gastric and intestinal digestion, and throw a very clear light upon the modern theories of the origin of disease by auto-intoxication. The ninth and tenth lectures are devoted to the chemical pathology of hepatic disease, and the two final lectures deal with diabetes, starvation, under-nutrition and obesity.

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* Lectures on Chemical Pathology in its Relation to Practical Medicine. By C. A. Herter, M.D., Professor of Pathological Chemistry, University and Bellevue Medical School, New York. London: Smith, Elder and Company. 1902.

The study of this book suggests the immense importance of including a course of lectures on this most practical subject in the curriculum of our own University. Or perhaps such a course would be even more useful in post-graduate teaching. In either case, if handled with anything of the skill evident throughout Professor Herter's book, it would be a valuable addition to the practical instruction of our medical school.

THE TREATMENT OF NEURASTHENIA.*

We have been much interested in reading Mr. Campbell Smith's translation of Messrs. Proust and Ballet's book on Neurasthenia. The translation is excellently done, and the book worth translating. We think, however, that the authors have rather spoilt their treatise by including in it almost every conceivable form of neurosis, from motor and sensory disorders down to tachycardia and the various forms of dyspepsia. Indeed, according to their treatment of the subject, we are compelled to regard neurasthenia as only a somewhat elongated term for neurosis, and with no more specific meaning. Our own idea of neurasthenia, on the other hand, is of a condition of nerve exhaustion arising without any very directly traceable cause, and we can by no means see the advantage of applying the term to such conditions as that of simple overwork or depression from grief or the generally neurotic state which is brought on by sexual excess. That there are conditions of feeble nervous health quite independent of such gross causes, we think it is useful to recognise, and to such we should prefer to restrict the term neurasthenia.

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* The Treatment of Neurasthenia. By A. Proust, Professeur à la Faculté de Médecine de Paris, and Gilbert Ballet, Professeur agrégé à la Faculté de Médecine de Paris. Translated by Peter Campbell Smith, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg. London : Henry Kimpton. 1902.

Taken as a description of nervous breakdown in general, the book, though somewhat sketchy, is on the whole satisfactory. As regards family history, the authors consider the chief predisposing cause to be a "neuro-arthritic" heredity. They regard the condition as being essentially a disorder of the male sex, men bearing to women in their collection of cases the relation of nearly three to one. Merchants, manufacturers, and clerks form more than fifty per cent. of their neurasthenic patients, and the more intellectual professions come far down in the list. Working men only afford six cases out of a total of 604. The chief "stigmata" of neurasthenia are said to be persistent headache, rachialgia, neuro-muscular asthenia, dyspepsia from gastro-intestinal atony, insomnia, and cerebral depression. Two main groups are described, consisting of those patients who are depressed and can hardly be induced to speak, and those who are excitable and talk too much. The illustrations are, of course, mainly taken from patients of the male sex. The general clinical description is, as we have said, that of neurosis of every variety.

THE WAR AGAINST CONSUMPTION.*

THIS book gives a general epitome of the chief opinions expressed at the recent Congress on Tuberculosis, which one of the authors attended as a delegate from the Kensington Royal Borough Council. It is intended to be read by the lay public, and is therefore written as far as possible in untechnical language. We are glad to congratulate Dr. Vinrace on having carried out his purpose in very excellent style.

Whether such books make for a really useful end, we confess that we feel some doubt. We have often expressed in this Review our opinion that books written for the general public on medical subjects are of rather questionable advantage. Yet it may be urged that the prevention of consumption can never be to any extent attained, until there is a widespread knowledge amongst the population of the conditions on which its dissemination depends. Indeed, we have to admit that one of the most striking features of the Congress was the unanimity with which the instruction of the public on the nature of consumption and the conditions which make for its extension was urged. Nevertheless, we still doubt the wisdom of dwelling too much upon these matters, and we note with interest that Dr. Frederick Roberts in his Lumleian Lectures has recently recorded a similar opinion. For this reason we hesitate to give too warm a welcome to Dr. Vinrace's book.

A CONCISE HISTORY OF SMALL-POX AND VACCINATION IN EUROPE.†

IN publishing a really concise history of the progress and results of vaccination in Europe, Dr. Edwardes has done good service to the cause of public health. His exposition of the subject is very clear, and the proofs brought forward of the efficacy of vaccination and re-vaccination are absolutely conclusive. Some such concise and convincing statement was needed, if only for purposes of reference, and in this book both facts and conclusions are reduced to within a very reasonable bulk. Nor has this been done at the expense of thoroughness. We are glad to see that Dr. Edwardes takes up an uncompromising attitude of opposition to what he terms "the great surrender" of the last Act of Parliament, and that he would unhesitatingly support any proposal to introduce a system of compulsory re-vaccination. His book completely justifies his attitude on these questions.

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* The War against Consumption. By Dennis Vinrace, M.R.C.S., L.S.A. Revised by John H. Vinrace, M.B. Lond., M.R.C.P. London: The Century Printing Company Limited. 1901.

† A Concise History of Small-pox and Vaccination in Europe. By Edward J. Edwardes, M.D. Lond., M.R.C.P. London: H. K. Lewis. 1902.

HANDBOOK OF BACTERIOLOGICAL DIAGNOSIS FOR PRACTITIONERS.*

Dr. Emery is to be congratulated on his admirably practical Handbook of Bacteriological Diagnosis. Not a few books on bacteriological technique are in existence, but we know of none in which the instructions have been more carefully thought out, or more minutely recorded. In making examinations of this sort details are all-important, and much labour is lost, and much incorrect result obtained from carelessness or ignorance in small matters of procedure. We can confidently say, however, that if anyone who works from this book falls short of accurate work, the fault will lie with himself. The thoroughness which is characteristic of the book is also displayed in the instructions for making blood examinations, which Dr. Emery has usefully included in his Manual. There can be no doubt that the Handbook will be widely used by present and past students of the Birmingham Medical School, but we prophesy a much wider field than this for its usefulness.

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* Handbook of Bacteriological Diagnosis for Practitioners, including Instructions for the Clinical Examination of the Blood. By W. d'Este Emery, M.D., B.Sc. Lond., Lecturer on Pathology and Bacteriology in the University of Birmingham. London: H. K. Lewis 1902.

BURDETT'S HOSPITALS AND CHARITIES.*

APART from the official information conveyed, Sir Henry Burdett's annual volume is always of interest on account of the excellent critical work contained in its preliminary chapters. The special features of this year's publication are the chapters on Capital Expenditure and Cost of Nursing. Amongst the special incidents of 1901, on which Sir Henry comments, is the change of management recently effected in the National Hospital for the Paralysed and Epileptic, and we note that he views with disapproval the experiment, now on its trial, of working the hospital without a recognised head over the whole establishment. We shall look with interest for the final verdict on this point in future editions, when sufficient time has elapsed to enable judgment to be passed on the point.

Correspondence.

CONSULTANTS AND THE WORKING CLASSES.

Sir,

As the difficulty created by the attempt to establish a Consultative Institution in the city excited a good deal of general interest in the profession, you may be glad to know that the scheme has been abandoned by its promoters. In the last report of the Birmingham Hospital Saturday Fund, where this is admitted, it is stated that "the claims of the more thrifty and self-respecting members of the community, to obtain consulting advice at a fee of half a guinea, rather than be forced to obtain it at the hospitals for nothing, have been set at nought." This statement, like so many others which have originated from the same source, is not true. The Consultants of Birmingham have all along maintained their willingness, under suitable conditions, to see working men for half a guinea. Recently the Birmingham Ebenezer Provident Sick Society, one of the largest industrial organisations in the city, which had affiliated itself to the Consultative Institution, found itself obliged to look elsewhere owing to the failure of that scheme. The officials applied to the representatives of the Consultants, and the following correspondence shows the result.

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* Burdett's Hospitals and Charities. By Sir Henry Burdett, K.C.B. London : The Scientific Press, Limited. 1902.

I am, dear Sir, yours faithfully,

ROBERT SAUNDBY.

Birmingham,
19th April, 1902.
To the Editor *Birmingham Medical Review.*

Copy of circular addressed to Consultants.

87, Cornwall Street,
Newhall Street,
Birmingham.

Dear Sir,

A short time ago the Consultants' Representative Committee was approached by the executive of the Ebenezer Sick Provident Society to ask whether members of their Society could be seen for half a guinea. In reply the following letter was sent:—

> Dear Sir,
>
> In reply to your inquiry whether the consultants of Birmingham would be willing to see your members for a fee of ten and sixpence, I am requested to draw your attention to the following passage from a letter which appeared in the Birmingham newspapers on May 18th, 1901, which was signed by all the members of my Committee; and which has been acted on repeatedly. The passage is as follows:— "The consultants and specialists in Birmingham agree to see any persons whose circumstances justify it for the modified fee of half a guinea upon the recommendation of a medical

practitioner, and where this cannot be obtained for any reason they will dispense with it, only reserving the right to protect themselves against abuse. If you should desire any further information Dr. Saundby and I would be glad to talk the matter over with you some afternoon, and if you will let me know I have no doubt we can arrange a time of meeting convenient to each of us.

"I am, yours faithfully,

"THOMAS WILSON,
Hon. Sec."

In consequence of this letter a meeting was held as suggested and it was agreed that members of the Ebenezer Sick Society would be seen by the consultants and specialists of Birmingham for half a guinea, on the condition that they should be people whose circumstances justified the concession, and it was further agreed to accept the recommendation of the Society as *prima facie* evidence of this fact. It was promised on behalf of the Society that no patient will be sent to a consultant except on the recommendation of one of the Medical Officers of the Society, and that the Society will not allow the few well-to-do persons who are members of the Society to obtain consultations under this arrangement. It was pointed out to the representatives of the Society that the Committee could not speak definitely for every individual consultant in Birmingham, but that it was able to do so for the great majority.

We shall be glad if you will kindly let us know before Saturday next should you not care to co-operate, so that we may take steps to prevent your being troubled with applications under this arrangement.

We are, dear Sir,
Yours faithfully,
ROBERT SAUNDBY. *Chairman.*
THOMAS WILSON, *Secretary.*
Consultants' Representative Committee.

Copy.

BIRMINGHAM EBENEZER PROVIDENT
SICK SOCIETY, STEELHOUSE LANE, BIRMINGHAM.

MEMORANDUM.

From February 27th, 1902.

ALFRED MOLE, To ROBERT SAUNDBY, ESQ.

Secretary,
16, Wretham Road, Handsworth,
Birmingham.

Dear Sir,

We cordially endorse the Circular you propose sending to the Consultants of Birmingham in reference to the above Society.

JOSIAH COX, *President.*
ALFRED MOLE, *Secretary.*

Copy.

March 11, 1902.

Dear Sir,

I have now pleasure in sending you the list of Consultants which I promised to obtain for your private use. Enclosed is the complete list of all those Consultants who are able and willing to undertake to see members of your club on the conditions laid down at our meetings.

Believe me to remain, dear Sir,
Yours faithfully,
THOMAS WILSON.

Mr. Alfred Mole,
16, Wretham Road,
Handsworth.

(The result of the circular was to obtain a list of 53 Consultants including Specialists in all departments.)

I thank you very much for your letter and list of Consultants; this I am sure will be very satisfactory to the Committee. This I have no doubt will be endorsed by resolution at the first meeting, in which case I will send you a copy. I venture to think that between us we have gone a long way in the settlement of a much vexed public question.

I am, dear Sir,
Yours very respectfully,
ALFRED MOLE.

Copy.

March 13th, 1902.

To Thos. Wilson, Esq.

Dear Sir,

BIRMINGHAM EBENEZER PROVIDENT SICK SOCIETY, STEELHOUSE LANE, BIRMINGHAM.

Committee Meeting Held March 27th, 1902.

Copy of Resolution.

"That this Meeting heartily expresses its warm appreciation of the manner in which the Consultants and Specialists of Birmingham have met this Society, whereby our members and their wives may receive expert advice for the nominal fee of 10/6."

Signed on behalf of the Meeting,

ALFRED MOLE,
Secretary.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

At the last meeting of the British Association, a special Committee was appointed to consider the conditions of health essential to the carrying on of the work of instruction in schools.

In the first instance the Committee are collecting information upon the following matters :—

1. A collection and tabulation of records of original observations on the periods of day appropriate for different studies, the length of lessons, and the periods of study suitable for children of different ages.

2. A collection and tabulation of anthropometrical and physiological observation forms in use in various schools with a view to preparing a typical form for general use.

3. A collection and tabulation of anthropometrical and physiological observations recorded in different schools for a series of years on the same children.

4. A collection and tabulation of recorded investigations into the causes of defective eyesight in school children and a definition of the conditions necessary for preserving the sight.

5 An inquiry into the practical knowledge of hygiene possessed by school teachers.

We are requested to bring these investigations under the notice of our readers and to ask their co-operation in obtaining information on the several points. Any facts or references relating to the subjects under consideration should be sent to the Chairman of the Committee, Prof. C. L. Sherrington, or to the Secretary, Mr. E. White Wallis, The Sanitary Institute, 72, Margaret Street, London, W.

University of Birmingham.

FACULTY OF MEDICINE.

First and Second Examinations for the Degree of Bachelor of Medicine and Bachelor of Surgery, April, 1902.

PASS LIST.

FIRST EXAMINATION.

Class I.

Bracey, Herbert Charles Horace.

Class II.

Austin, John Staines
Crowe, Henry Neville
Hayes, Lionel Chattock
Hunt, Richard Stuart Wathen
Jotham, George Frederick
Roberts, Walter Rowland Southall
Walker, Spencer Graham
Whitcombe, Edmund Stanley

SECOND EXAMINATION.

Class II.

Davies, Fred Thomas Holloway
Walsh, Fred Newton
Warren, Herbert Henry

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

MESSRS. BURROUGHS AND WELLCOME send us two additions to their list of Tabloids, each of which contains ammonium chloride. The first consists of 3 grains of this drug together with 2 grains of extract of liquorice, the latter being added for the purpose of disguising the intensely saline taste of the chloride. The result is sufficiently successful to enable the tabloids to be used as lozenges. The second tabloid contains $\frac{1}{50}$th grain of apomorphine hydrochloride in addition to the other two ingredients, and is intended for use especially in cases of chronic bronchitis, bronchorrhœa, and whooping cough.

New Books, etc., Received.

From Macmillan and Company, Limited—

The Treatment of Injuries by Friction and Movement. By WHARTON P. HOOD, M.D. St. Andrews, M.R.C.S., L.S.A.

The Climates and Baths of Great Britain. Vol. II.

From John Wright and Company—

An Introduction to Dermatology. By NORMAN WALKER, M.D.

From Cornish Brothers—

Contributions to Practical Medicine. By SIR JAMES SAWYER, Kt.

From Young J. Pentland—

The Study of the Pulse, Arterial, Venous, and Hepatic, and of the Movements of the Heart. By JAMES MACKENZIE, M.D. Edin.

From H. K. Lewis—

A Concise History of Small-pox and Vaccination in Europe. By EDWARD J. EDWARDES, M.D. Lond.

We have also to acknowledge the following—

The Technics of Nephropexy and other Reprints. By GEORGE M. EDEBOHLS, M.D.

Bullets and their Billets. By J. HALL-EDWARDS, F.R.C.P., F.R.P.S.

⁂ Authors can have reprints of articles at the following rates:—

Not exceeding 8 pages	...	8/-	per 100
„ 16 „	...	12/6	„

The re-arranging of the type is the principal cost in the production of these reprints, so that smaller numbers will be the same price. Larger numbers at a proportionate reduction.

The Subscription to the *Birmingham Medical Review* is 6s. per annum, post free.

NOTICE.—*All Communications, Exchanges, and Books for review, should be sent direct to the Printers and Publishers, Messrs. Hall and English, 36, Union Street, Birmingham.*

THE
BIRMINGHAM MEDICAL REVIEW.
JUNE, 1902.

ORIGINAL COMMUNICATIONS.

A CLINICAL LECTURE ON SOME CASES OF ACUTE CEREBRAL LESION.

BY ARTHUR FOXWELL, M.A., M D., M.SC., F.R.C.P.,
PHYSICIAN TO THE QUEEN'S HOSPITAL.

We have lately had several interesting cases suffering from acute cerebral lesions in the hospital, which have well illustrated various points of diagnosis and prognosis. I propose to-day to relate them to you.

Case 1.—Simon C., æt. 36, is still with us. He is a tailor's presser and eighteen years ago was under the late Sir Morell Mackenzie for "sore throat," which has left a perforation one-third of an inch in diameter in his soft palate with extensive cicatrisation, especially affecting the right side. It was probably of syphilitic origin and has made his speech very indistinct rendering any diagnosis of palatal paresis difficult.

On May 5th, about 5 p.m., he suddenly became giddy and fell down in the street, but was not unconscious: he could not rise because of weakness of his right arm and leg, but walked home with the assistance of a policeman. At the same time his speech became much more difficult to understand. Arrived at home, he drank some tea: the first cup he could lift to his mouth, but not the second, owing to increasing weakness of his right arm. He then went to bed, but in an hour and a half, feeling better, he came downstairs unassisted. His right side again grew feeble and he had to be helped upstairs to bed once more. Next day, May 6th, he found his face on one side and could take food with difficulty, some coming out of his mouth and some returning through the nose. He was then brought to the hospital and admitted under my care.

On admission he was found to be intelligent, not emotional, and with good memory. He had great difficulty in enunciation, but no other form of aphasia. There may have been slight paresis of the right side of the soft palate. The lower half of the right face was markedly paralysed; the tongue was protruded strongly to the right and withdrawn slightly to the left. There was considerable paralysis of right arm and leg; this was least marked at the hip and shoulder which could be moved against slight resistance, but increased distally so that the fingers could be only feebly extended and were unable to grasp anything; the toe movements also were similarly weak, though the lower limb was less paralysed than the upper.

The plantar reflex was exaggerated on the right with dorsiflexion of the whole foot; normal on the left. The knee-jerk was exaggerated on both sides, but more on the left; and in each case followed by a series of secondary contractions. Ankleclonus was easily obtained on the right side, but did not occur on the left. Touch was blunted over right side of face, right arm and right leg, especially hand and foot; the sense of localisation was also lessened as well as that of pain over the same areæ. The distinction of heat and cold was similarly defective on the right side, and at first also in one or two areæ on the left side. The right hand had marked loss of the stereognostic sense, even when full allowance was made for its weakness of grasp, *e.g.*, spoon was called scissors. Sight, smell and taste were unimpaired.

On May 7th, there was distinct improvement in arm, leg and right side of palate. Speech was also more distinct, and food no longer returned through the nose, but the facial paralysis remained unchanged. On May 8th, improvement continued.

Sensation also began to improve, the change in the temperature sense being no longer detected. The reflexes were less exaggerated, though there was still ankleclonus and dorsiflexion of the big toe on the right side. The right pupil was noted as being smaller than the left. On May 9th, there was very little difference between the power of the two legs, but paralysis of face and tongue was but little changed. The knee-jerk was still increased, especially on the left side, but the secondary contractions were less. Right pupil remained smaller. Touch, pain, and stereognostic senses remained as before.

May 25th. Discharged from hospital. There is now no sensory change of any kind. Sensations have been normal on the right since the 10th, the temperature sense being the last to get right: on the left "pins and needles" were occasionally felt till the 18th, and practically no motor difference between the two legs, but the right arm remains a little weaker than the left, though able to perform all ordinary movements. The face and tongue have improved less than the limbs, though it is now difficult to perceive any paresis of the face when at rest. There has been no dorsiflexion of the right hallux since the 16th. The increased reflexes and the cloni on the right side ceased on the 22nd.

You will notice in this account that sensory changes were almost as marked as motor, but that recovery from them was speedier and more complete. You sometimes ask me why in cases of old cerebral hemiplegia the changes are only motor; in such cases, for example, as come before us in the out-patient room. My answer has been that in some, such changes still exist, and may be found if carefully sought for. If you question your hemiplegic he will often tell you he is himself conscious of such changes, though he has long ago got used to them; occasionally, if his work be light and delicate, he will even come to you making these his chief trouble rather than his motor deficiency.

It is not, then, that sensory changes do not exist, but that they attract the attention both of ourselves and of the patients to a less degree than motor ones: they also pass off sooner, and are probably never so marked; and lastly, we must remember that the severer cases of apoplexy do not recover, and are usually never in a condition to make any accurate sensory observations upon.

It is often said that sensation is not affected because the path of its fibres lies at the extreme end of the posterior limb of the internal capsule, and that this end of the posterior limb is not so subject to injury as its anterior part or the genu, as seems to be shown by the greater paralysis of the face and arm than of the leg, but in the case before us there was very little motor affection of the leg, yet considerable disturbance of all forms of sensation. Such a case suggests to us that the sensory fibres may not be confined to the extreme end of the posterior limb, but that they travel up in various parts of it just as the motor fibres travel down.

Diagnosis.—There seems to be little doubt that this patient had some lesion of the lenticulo-optic artery, which supplies the posterior limb of the internal capsule and lenticulate body. The lesion would appear to be considerable in extent but of small intensity, occupying the genu and the whole of the posterior limb, affecting the genu and front half of the posterior limb most, but no part severely. Such a lesion does not suggest hæmorrhage, for this nearly always means destruction of tissue if of large extent.

Ordinary thrombosis is usually an accident of old age, due in great measure to enfeebled circulation: the block is complete and rarely temporary, the conditions leading to it being permanent ones. Our patient is only 36, and his heart is strong and healthy, in fact, his constitutional state strikes one as the opposite of that which leads to thrombosis.

What then is this man suffering from? What injury has been inflicted on his brain?

Dr. James Taylor, in *Allbutt's System*, says: "Given a patient under 40, in whom there is no evidence of cardiac or renal disease, or any other condition likely to give rise to blocking or rupture of vessels, we are justified, even in the absence of any confirmatory history, in assuming, for purposes of treatment at least, that the condition is the result of syphilitic arterial disease."

Our patient falls well within the required conditions of this dictum, indeed, we can go further, for his history of specific disease is strong, as he tells us that he has had gonorrhœa; and that the hole in his soft palate is the result of a sore throat eighteen years ago. Most probably then the branches of his left lenticulo-optic artery have undergone syphilitic degeneration to such an extent that in one the blood flow became so impeded that a thrombus resulted; this upset the circulation of the part and other twigs became similarly affected. As he lay quietly in hospital the steady healthy blood supply has re-established part of the circulation which was nowhere entirely cut off and, moreover, the opposite half of the brain has assisted its damaged brother in performing associated movements.

Prognosis.—Syphilitic arterial disease is often very local in its incidence. There is therefore no need to forecast similar accidents elsewhere in the brain, but the artery now affected is likely to suffer again, for drugs do not seem to have much effect upon its regeneration.

The other cases have had a fatal ending, so that we have the opportunity of correcting our diagnosis by the help of a *post-mortem* examination.

Case 2.—Thomas G., æt. 61, window cleaner, was found at the bottom of a ladder by a policeman, at 5 p.m., on April 21st, conscious, but unable to rise. He said he was not hurt and did not know why he fell. His speech was thick and difficult to understand.

On admission there was some paralysis of the right arm and right leg and also, to a slight extent, of the lower half of the right face. The knee-jerk on the right was slightly more active than on the left. The pupils were equal and reacted to light and accommodation. The pulse was long, slow and irregular, but the tension was not high, though the arteries were thickened and tortuous. The heart's apex beat was a little displaced to the left, being half an inch within the nipple line. The urine analysis was 1,025, some albumen, urea 2·5 per cent.

In three hours he was unconscious, remaining so with deepening coma for four days when he died. His temperature on admission was 96·6° and ran steadily up to 103° at death. His pulse and respiration also steadily increased from 52 and 26 to 130 and 68. Six hours after admission voluntary movements were made with left arm and leg, but not on the right side, though on the right passive movements were actively resisted. Both knee-jerks were equally exaggerated, as also were the plantar reflexes with dorsiflexion of the big toe on the right, and of the whole foot on the left. Rigidity of all four limbs was fast coming on. The right pupil was larger than the left; both reacted very slightly and sluggishly to light.

April 23rd. The knee-jerks are difficult to obtain, though the plantar reflexes are still lively. The pupils are equal, small and fixed. The left leg is still moved, but not the left arm.

April 24th. Cheyne-Stokes breathing. Less rigidity of limbs; reflexes as before; pupils unchanged; all voluntary movement has ceased. There is conjugate deviation of eyes to the right.

April 25th. 2.30 p.m. He died.

Diagnosis.—Cerebral hæmorrhage: locality doubtful: probably into the pons, chiefly on its left side. This diagnosis was wrong, but the following indications influenced us in making it:—(*a*) The rapid rise of temperature pointed to a lesion of a severe and dangerous type, and practically limited its locality to the basal ganglia, pons, or medulla. (*b*) Hæmorrhage into the medulla is rare, very quickly fatal and is usually accompanied by paralyses of cerebral nerves; but none such were detected during the three hours of consciousness, nor afterwards. (*c*) The absence of complete paralysis of the right side and the considerable involvement of the left; in hæmorrhage into the cerebrum or basal ganglia only one side is affected unless the lesion be a large one and then the paralysis of that side is complete, while the other is only slightly affected. (*d*) In coma the pupils usually are greatly dilated and equal, but here they became small and the right larger than the left. (*e*) In large hæmorrhages into the basal ganglia it is unusual to get any recovery from the initial insensibility; and certainly not for so long, nor of such a complete character, as in this case. Yet our diagnosis was wrong, the hæmorrhage had destroyed most of the left optic thalamus and posterior limb of the internal capsule, and had burst into the lateral ventricle and found its way to some extent into the right lateral ventricle and fourth ventricle. The destruction of the thalamus should have caused hemi-anæsthesia and hemiopsia, but the speedy inset of unconsciousness prevented our determining the existence of these conditions, and I still think, judging by the signs and symptoms we discovered, that the chances were in favour of the hæmorrhage being pontine.

Our *prognosis* was unfavourable after the first day, because of the rapid rise of temperature, because of the onset of insensibility and, chiefly, because we thought there was renal disease, though the evidence of this last was not conclusive during life; but after death the left ventricle of the heart was found to be much hypertrophied, and the kidneys distinctly, though only moderately, granular in character.

Case 3.—John S., æt. 52, labourer, admitted under my care on March 19th, complaining of loss of power in his legs. Whilst out for a stroll after tea he suddenly felt giddy, and clung to a lamp-post for support: after remaining so for several minutes he tried to walk home, but his legs felt weak and stiff, and he had to be assisted. On reaching home his speech was so changed that he was with difficulty understood. He was then brought to the hospital.

On admission he could answer questions intelligently, he could barely walk and his gait was spastic. Knee-jerks and plantar reflexes were much increased on both sides with marked ankle-clonus and dorsiflexion of both big toes. Arms and face not affected. Pupils moderately contracted, equal, and reacted normally. He was a stout, bull-necked man, said he had had syphilis, but was only a moderate drinker.

Soon after admission he grew much worse, vomited, and in an hour was comatose. The mouth was now slightly drawn to the left, the legs were much more rigid, and no ankleclonus was obtainable. Both arms were moved, but the left less than the right, the left also was somewhat rigid.

The heart's apex was ¼ of an inch external to the nipple line in the fifth space; there was a soft systolic apical murmur conducted to the axilla: the arteries were much thickened, the liver reached 1½ inches below the ribs, and its edge was hard and irregular. The bladder reached 2 inches above the pubes. As the coma deepened the pupils became more contracted and the rigidity of the limbs increased, otherwise the condition remained unchanged till his death at 6 p.m., on March 21st.

The temperature rapidly and steadily rose from 96° on admission to 103·4° at death.

The urine analysis was 1,023, very faint haze of albumen, 2·5 per cent. urea, nothing abnormal seen under the microscope.

Diagnosis.—Large hæmorrhage into the pons.

The fact that, notwithstanding the deepening coma which dilates the pupils, there was increasing pupillary contraction was strongly in favour of a lesion of the pons.

Again, the *equal* affection of both legs at first, though neither was paralysed, but only gave signs of irritation, showing that the hæmorrhage was not a large one at that time, and that therefore the involvement of the other limb from shock, owing to the sympathy of associated movement, should have been slight or absent, if the lesion had been in the region of the basal ganglia.

Lastly, the absence of unconsciousness at first again proved the hæmorrhage to have been very small at that time, and as, nevertheless, it caused definite organic signs (*e.g.*, dorsiflexion of both toes), this smallness pointed to the pons, where a small area of lesion can do so much mischief.

Prognosis.—Unfavourable. There was little doubt of this owing to the locality of the hæmorrhage, the rapid onset of coma and pyrexia, with the steady increase of both. The condition of the kidneys, though very suspicious, was not certain, as the enlargement of the heart might have been owing to mitral disease, the impulse not being of the hypertrophic nature characteristic of renal disease, whilst the condition of the urine was consistent with health.

At the *post-mortem*, a section through the middle of the pons showed a hæmorrhage, most marked on the left side. It measured one inch from left to right, destroyed the transverse fibres and pressed up into the fillet fibres: it was deep, there being ⅞ of an inch between it and the surface of the pons, hence the motor fibres would appear to have largely escaped. The pons, as a whole, was 1$\frac{5}{16}$ of an inch through on the left side, but only 1⅛ on the right.

The aortic and mitral valves were thickened, both ventricles were dilated, and the heart weighed 17 ounces. The liver was of the typical hobnailed type with a large amount of cirrhosis. It was increased both in size and weight (4 lbs.) as usually happens in cirrhotic livers. The kidney capsules were adherent, their removal tearing the substance; the cortices were of normal thickness and each organ weighed 6 ounces.

Case 4.—Harry R., æt. 52, zincworker, was admitted comatose under the care of Dr. Carter, to whose kindness I am indebted for permission to relate this case to you, as well as to Dr. Stanley for the notes both clinical and pathological. The clinical notes are necessarily very brief, as the patient died a few hours after his admission on May 6th.

Both arms, when lifted, fell dead: both legs were rigid and showed coarse tremor. There was slight conjugate deviation of eyes and head to the left. The right pupil was larger than the left, but neither was very small. The knee-jerks were increased, the right a little more than the left. The tremor went from the right leg and its rigidity decreased. There was doubtful pharyngeal paresis. The temperature was 101·4°.

Diagnosis was one of hæmorrhage into the pons, though the coma made it impossible to estimate the paralysis. The disappearance of tremor in the right leg and the decrease in its rigidity, indicating a change from irritation to paralysis, pointed to a left-sided lesion, as did also the deviation of the head and eyes to the left. On the other hand, a hæmorrhage into the basal ganglia to produce such temperature and coma must have been a large one, and with a large hæmorrhage there is usually flaccidity from the first; moreover, one side is but slightly affected. However, these things are not always so, as is well exemplified in case 2, where rigidity remained almost to the end, and both sides of the body were considerably and not so very unequally involved.

Prognosis was naturally unfavourable. *Post-mortem*, a large hæmorrhage was found, affecting chiefly the right side of the pons, but involving the greater part of it and extending into the motor tracts. The heart's left ventricle was one inch in thickness, and both mitral and aortic valves were thick and rough. The kidneys only weighed ¾ ounce each and were of the typical red granular type.

Case 5.—This is not only the rarest, but the most interesting and instructive of the lesions I have to relate to you. John L., æt. 59, excavator's labourer, was admitted under me on April 26th. His family history was good; he had had gonorrhœa forty years ago, winter cough every winter for some years, and "erysipelas in his legs thirty-four times." Otherwise his previous history was very good, and he had the appearance of a clean-living man of tough constitution.

At breakfast on April 14th, he found he could not swallow solid food, and fluids partly regurgitated through the nostrils. In all other respects he remained well, taking only fluid food till the evening of April 24th, when he noticed slight weakness in his left leg with some hoarseness, and when he placed his hand in hot water it felt cold. On April 25th these symptoms increased; he could only walk with a stick. On admission he lay on his back and an occasional slight fit of coughing would turn his face purplish. His voice was thick and husky, but his intellect quite clear and reasonable.

The sense of touch was blunted in the left arm and to a less extent in the left leg; both legs felt as if they had "gone to sleep." The sense of pain was almost absent in the left arm and much blunted in the left leg. Left abdominal wall was also slightly blunted to pain. The left grasp was feebler than right; the left arm and hand were sluggish and fumbling in performing co-ordinated movements. The left knee-jerk was exaggerated, there was dorsiflexion of first and second toes on *both* sides, but the contraction of the calf muscles and tensor vaginæ femoris was much more active on right. Wrist, triceps and jaw-jerks were absent on both sides. Both pupils were small and reacted very feebly to light and accommodation, but the right was much smaller than the left. The tongue was protruded and withdrawn straight, the left pillar of the fauces and left wall of the pharynx were bulging flaccidly. The heart's apex was half-an-inch external to the V. N. L. in the 5th space; its impulse rather feeble; pulsation in epigastrium and external jugulars. The arteries were thickened and the radial pulse full, low in tension and regular. The lungs were emphysematous and chest barrel-shaped.

April 27th. Ptosis of right upper lid, and paresis of right internal rectus were present. Pupils small, equal and fixed. Tongue protruded to the left; no facial paresis observed. Hearing a little dulled—watch heard 18 inches on left and 24 inches on right. More paralysis of the left arm; he could not move his fingers nor wrist, and his elbow and shoulder only very feebly. Tactile sense was good, but both pain and stereognostic impaired.

April 28th. Laryngeal cords were noted as moving well. There was some paresis of right palate. Hot and cold water were both recognised as warm over the whole left side except the face. Taste and smell were found to be both impaired for some substances but not for others. The left knee-jerk could not now be obtained, but on the right the reaction was increased. The dorsiflexion of the hallux was more marked on the left, the contraction of thigh and calf-muscles on the right. The left ankle was rigid and the movements of the whole limb were impaired. Fluids tended to regurgitate through the nose.

April 29th. Ptosis was greater, swallowing more difficult. Paralysis of left forearm and fingers was complete. Right side of the face seemed the weaker. Right internal rectus was weak: pupils were very small, the right smaller than left; reactions sluggish. Could hear watch about 8 inches away from each ear, but could not hear when placed on scalp and ears closed.

Hot and cold things were equally pronounced warm throughout left side below the clavicle: the stereognostic sense was also impaired on that side. On May 1st the motor and sensory changes were much the same, but pneumonia now developed. There had evidently been great acute general emaciation: the face especially looking pinched and sunken. He died on May 5th.

Diagnosis.—The numerous affections of cerebral nerves pointed to the upper part of the medulla as the locality of the lesion: it was evident, too, that the greater part of the lesion was on the right side.

What was the nature of the lesion? The varying intensity of its signs, their creeping character, and the complete retention of consciousness put cerebral hæmorrhage out of court. The temperature, moreover, was not that we are accustomed to see in fatal cerebral hæmorrhages; it ran up at first from 97° to 102°, but failed to continue this upward movement, maintaining during the remainder of his life a position which varied each day between 99° and 101·5°. It was, indeed, a remittent fever and pointed strongly to some germal action; and this was the diagnosis which on the whole seemed to me most probable. The next likeliest seemed to be tumour, but the march of events was too rapid; there was no vomiting nor giddiness and, moreover, tumour does not in itself cause temperature. At first, bulbar palsy crossed my mind, but a second visit showed the impossibility of this: the condition was far too acute and the affection of the limbs far too great. This affection of the limbs was evidence of a deep coarse lesion, and hence put on one side all superficial inflammations, such as are most of those due to germal action. Acute softening was discussed, and it would best have explained the signs; but acute softening accompanied with considerable fever must almost of necessity be germal, *i.e.*, septic in origin. Such septic softening or destruction was my final conclusion.

At the *post-mortem*, the upper part of the right pyramid of the medulla appeared enlarged; on section, an irregular wedge penetrated from the surface for an eighth of an inch into the substance of the pons; this looked something like sclerosis, but had a more vitreous texture; deep to this was a focus of softening. More than this, I cannot tell you now, as it is not yet sufficiently prepared for Dr. Stanley to examine microscopically. I expect we shall find that it is an acute inflammatory infiltration, resembling the cloudy swelling which we see in other organs, part of which has softened to what is practically an abscess.

Prognosis.—Where the diagnosis is uncertain, the prognosis must necessarily be so also. But that so widespread a medullary lesion, producing a temperature of such marked inflammatory type, must of necessity be very dangerous was evident, and though we could not tell the duration of life in days, yet we felt there was little hope of recovery. The onset of septic pneumonia at once told us that the prolongation of life could be for two or three days only.

ON THE THERAPEUTIC EFFECTS OF LIGHT AND THE X-RAYS.

BY J. HALL-EDWARDS, L.R.C.P.,
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AND (LATE) TO THE
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It is only within the last few years that the therapeutic effects of light have received any serious attention at the hands of surgeons. Quite recently the Röntgen Rays have been discovered, and there can be but little doubt, that the extraordinary properties of these, have to a great extent instigated investigators to increase their efforts in the direction of the application of light for therapeutic purposes. It is my intention, in this short paper to lay before you a brief account of these researches up to date, and I shall hope to prove that although our knowledge of the subject is extremely limited, we have at hand an undeniable amount of evidence of the value of various rays in therapeutics. During the last half century much has been written on the therapeutic and pathological effects of light upon the tissues; but it was not until Dr. Niesl Finsen of Copenhagen took the subject in hand that any real progress was made. As the outcome of the researches of this able investigator, it has been proved (beyond the power of contradiction) that in the chemical rays contained in light, we have a therapeutic agent of considerable value. Moreover, his genius has enabled him to practically apply his knowledge with such good effect, that his light treatment has now gained an acknowledged place amongst our most valued remedial agencies. The "Finsen" treatment (as at first introduced) had many drawbacks, not the least important being its expense, and the time occupied in its successful application.

The apparatus designed in Copenhagen, and which was first introduced into this country at the London Hospital, consisted of a very powerful Electric Arc Lamp of some 10,000 candle power capacity, which consumed 75 ampères of current, at a pressure of 60 volts. The light, after being filtered through heat-absorbing media, was focussed upon the parts by means of a telescopic arrangement, some three feet in length; four such arrangements being placed round each arc lamp. The whole apparatus costs something like £1,000, and its working entails an expenditure of £200 per annum.

In order to produce the maximum effect at so great a distance from the source of light, it is necessary that the light rays should be brought to a focus, and thus a very limited area of the diseased surface can be treated at a time, and the length of the sitting is about an hour.

In severe cases, as many as 200 applications were necessary to produce any marked result, a very trying ordeal for the patients. The applications entail a large amount of inconvenience, and whilst, if properly carried out, they are nearly painless, they are, if successful, followed by a reaction, which is not so. From this description it may be gathered that only in a few cases can the patients stand the strain imposed upon them by the treatment.

Recently lamps have been introduced in which the arc is placed closed to the rock-crystal lens. They have the advantage of consuming only one quarter the amount of current required by the original lamps, cost but a few pounds, the area treated at each application is much larger, and the length of exposure is reduced to from ten to twenty minutes.

There are several patterns of such lamps upon the market, perhaps the best known being "The London Hospital Lamp." In these lamps, the heat rays from the arc are cut off by means of a screen through which water is circulated: in the centre of the screen is a projecting lens of rock-crystal through which water also circulates.

The rock-crystal lenses vary from one to two inches in diameter, and the part to be treated is pressed against them.

Should the area it is wished to treat be less than the diameter of the lens, the surrounding parts are protected by some opaque material. Thick black paper answers very well. It is necessary for the effective action of the light rays, that the part exposed to their action should be rendered as bloodless as possible, hence the necessity for compression.

In this class of lamp the compression is brought about by pressing the part against the rock-crystal lens in the front of the instrument. In the original "Finsen" lamps the compression was brought about by a specially devised compressor, through which water circulated.

It is my pleasure to introduce to your notice (for the first time) a Lupus lamp of novel construction in which the advantages of the new and old methods are combined.

The lamp is known as the "Cox Lupus Lamp," "Heathcote Patent." It is (Fig. 1) self-enclosed, and the great novelty consists in the fact that the carbons are kept cool by means of water jackets to within an eighth of an inch of the actual arc. The advantages of this arrangement are :—

1. That the carbons being kept cool offer but a very small resistance to the passage of the electrical current, hence a more brilliant light is obtained.

2. That the heat produced is reduced to a minimum.

3. Small carbons can be used.

4. Owing to the small amount of heat generated, a condensing lens can be placed within half an inch of the source of light without any great risk.

The whole arrangement is kept cool by means of a stream of water, very little of which is required for the purpose, one pint per minute being amply sufficient.

In addition to the condensing lens the instrument is furnished with a separate rock-crystal lens mounted in a sliding metal tube, which enables the light to be brought to a focus within three or four inches of the lamp. It will thus be seen that this lamp may be used after the manner of the "Lortet-Genoud" or "London Hospital" lamp, whilst at the same time it retains the advantages of the original "Finsen." If the light be used at its focus, a compressor must of course be used, and the time of exposure must be considerably lengthened.

The special compressor supplied with the instrument can be inserted into the current of water used to keep the lamp cool, and it is so arranged that the water circulates through the compressor before entering the lamp itself. It is thus kept beautifully cool. The water may be supplied from a zinc tank which can be fixed to the wall above the lamp, or from a tap in the usual manner.

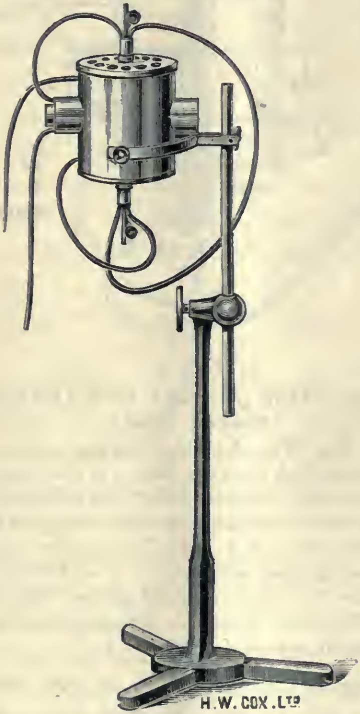

FIG. 1.

"THE COX LUPUS LAMP."

(Heathcote Patent.)

The stand is firm, and rigid, and will allow of the lamp being fixed in any desired position.

A recent visit to the London hospital has convinced me that in certain cases, the original Finsen treatment has distinct advantages; this lamp is therefore doubly worthy of notice, as either method of treatment can be adopted at will.

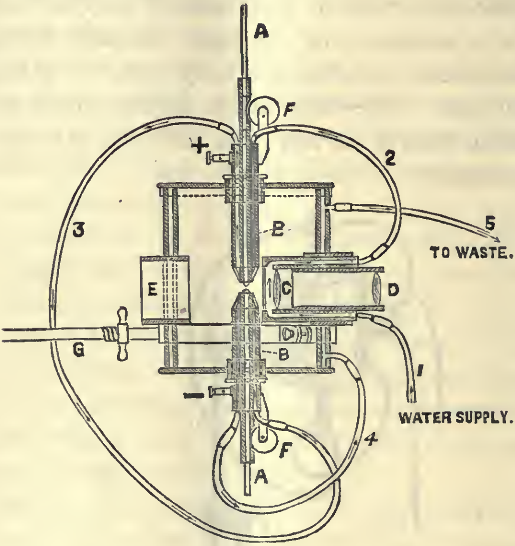

FIG. 2.

SECTIONAL VIEW OF "THE COX LUPUS LAMP."
(Heathcote Patent.)

A. A. Carbons. B. B. Water jackets for keeping carbons cool. C. Condensing lens, through which water circulates. D. Front lens in sliding tube, for bringing light to focus, or against which the part may be compressed. E. Tube supplied with coloured glasses for viewing arc; or for holding a second condensing lens. F. F. Thumb-screws for regulating carbons. G. Arm for connecting lamp with stand. + — Binding screws for connecting electric current. The arrows, and figures, indicate the manner in which the water circulates. When a compressor is used it is inserted into the current between the source of supply and 1.

In actual practice the lamp has in my hands proved a complete success, and I venture to think that with slight modifications it will be a perfect instrument. It has been pointed out that the light rays produced by an electric arc passing between iron, or other metal poles, are much more rich in chemical rays than those produced by carbon conductors, and I am at present engaged in experiments with the intention of proving this theory.

The advantages offered by the new form of lamp have led many to take up the light treatment, who would not have done so under the older conditions.

There can be no gainsaying the fact, that at any rate in lupus and rodent ulcer, the results produced by the light and X-ray treatment are far more successful than those obtained by any other method. The only question which has yet to be answered is that of permanency, a question which must wait for years for its satisfactory solution. I have recently seen a case of lupus, which to all outside appearances, was cured by injections of tuberculine; but on examining the patient I noted the fact that all the lymphatic glands in the neighbourhood were very much enlarged and indurated, and I cannot help thinking that in this case the *locale* of the disease has only been changed.

I have not noticed any changes in the lymphatic glands, in any case which has come under my notice, after either light or X-ray treatment.

The advantages of light treatment with the modified lamp are:—

1. The shortness of the necessary exposure.
2. The increased area treated at each operation.
3. The ease with which the instruments can be manipulated.
4. The diminished cost of the treatment.
5. The lessening of its total duration.
6. The reaction, which necessarily follows a successful application, covers a larger area, and the total pain bearing period is thus considerably shortened.

At the discussion upon these new methods of treatment which took place at the Dermatological Section of the British Medical Association, at Cheltenham, several cases of lupus which had been treated by the "Finsen" light were exhibited, and I was rather surprised to find on questioning the patients, that the X-rays had been also used in each case.

Up to quite recently my knowledge of the treatment of lupus, rodent ulcer, etc., was confined to the application of the X-rays and high tension electrical currents, and I must admit that even now, in my hands, the X-rays produce the best results.

Quite recently a new source of ultra violet or chemical rays has been introduced, and a lamp has been devised which promises to be exceedingly useful. In this lamp (Fig. 3) the light emanates from a rapidly oscillating spark which passes between two metal points. For generating the spark any source of high tension electricity may be used to charge a condenser, or Leyden jars, in parallel with the metal points before mentioned, which should be kept about one-eighth of an inch apart. The condenser discharges across the gap with oscillations at the rate of hundreds of thousands per second, giving out a small amount of visible light, and an abundance of ultra-violet and violet rays. When an alternating current is available, a step-up transformer

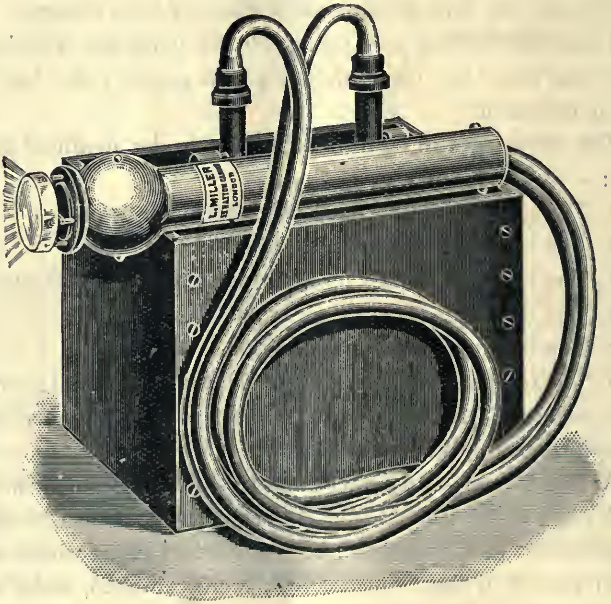

FIG. 3.

INDUCTION COIL ULTRA-VIOLET LAMP.

(The St. Bartholomew's Hospital Lupus Lamp.)

should be used to charge the condenser, but if not, an ordinary induction coil may be used, with a motor mercury break.

The lamp is contained in the end of a long tube, which is connected to the condenser by insulated conductors. The rays are passed through a rock-crystal lens, or a piece of ice, which is used as a compressor. Quite recently it has been suggested that a lens of rock-salt may be use with advantage. The great drawback to the use of this lamp is the noise which is caused by the rapid passing of the sparks between the metal points. From the fluorescent effects produced by this lamp, there can be no doubt of the abundance of invisible rays given out; and if the therapeutic effects of the other forms of light treatment are due to the presence of invisible rays, this source of light should prove of great use. I have previously pointed out that if the light treatment of lupus is to be successful, it is an absolute necessity that the parts exposed to the rays should be rendered as bloodless as possible by compression. In certain situations this is a matter of great difficulty, and in some it is at present impossible. Certain devices have already been suggested to overcome these difficulties, and I have little doubt that in the near future we shall so modify our methods, that even the most difficult cases can be successfully dealt with.

Early in the history of the application of the Röntgen rays to practical surgery, it was discovered that prolonged exposure at a short distance from a highly charged Crooke's, or Lenard tube, produced injurious effects upon the human tissue; and that the skin and occasionally the deep structures were destroyed, or seriously injured. Certain observers came forward who spoke of beneficial effects; some no doubt largely due to imagination, and others to a combination of circumstances, of which the X-rays played only a small part.

The first paper of importance pointing out the dangers produced by the unscientific application of the X-rays was written by Nikola Tesla, the famous New York electrician; who not only described the ill-effects which followed prolonged exposure at a short distance from a highly charged Crooke's tube; but described methods whereby these ill-effects could be avoided. The effects produced upon the skin and nails of the hands of constant experimenters proved, beyond all doubt, that some physiological action was taking place; and from numerous accidents which have been reported from time to time in the Medical Journals, it is absolutely certain that in the ignorant application of the X-rays, we have a danger which renders it necessary that their use should be restricted to skilled hands. During the six years I have been engaged in the practical application of X-rays to Medicine, and Surgery, I have only had one case in which deleterious effects were produced by such an exposure as is necessary to produce a negative for the purposes of diagnosis. This occurred in the case of an officer, who was sent to me, whilst in South Africa, for the purpose of localising a bullet, which had lodged in his spinal column. Two exposures were given, each of twenty minutes' duration, the tube being placed at a distance of eleven inches from the skin. The lengthy exposure here given was rendered necessary by the fact that the amount of the electrical current at my disposal was extremely small.

Two days after the exposure, my attention was drawn to a slight dermatitis over the lower part of the chest, and upper part of the abdomen, accompanied by slight pain and burning. The application of an evaporating lead lotion allayed all symptoms in twenty-four hours. I attribute the accidental production of dermatitis in this case, to the lowered vitality of the patient, consequent upon a severe injury to the spinal cord, accompanied by paralysis of the lower limbs and sphincters. Recent improvements in apparatus have rendered the time of exposure, which is necessary for the production of a radiograph, so short; that in skilled hands, we should hear no more of the accidental production of X-ray burns.

Under the conditions which now exist, an exposure through the thickest part of the body should not occupy more than three minutes, and moreover, the tube can be placed further from the body than was formerly the case. The fact that the skin could be destroyed by prolonged exposure at a short distance from an X-ray tube, together with the knowledge that protection could be afforded to parts which there was no reason to effect, early led experimenters to try the effects on certain diseases of the skin, where destruction of the tissues by cautery, or caustics, or removal by operation, had hitherto been resorted to.

During the experiments in this direction it was found that, in certain cases, a beneficial effect was produced before the application had gone sufficiently far to result in actual destruction of tissue, and the effect of a series of fairly lengthy exposures, at what is known as a safe distance from the tube, produced results in cases of lupus and rodent ulcer, which pointed to a field of usefulness for the new method.

From all parts of the world have come in news of cures brought about by continued short exposures to the X-rays, and there can be little doubt that with increased knowledge we have at hand a therapeutic agent of considerable value. Cases of lupus, rodent ulcer, eczema, ringworm, favus, sycocis, psoriasis, elephantiasis, lepra, nævus, acne, etc. etc., together with chronic ulcers, have been treated with good effect, and latterly certain forms of cancer have been materially benefited by X-ray treatment.

There are many points in such treatment which call for attention, the chief being the kind of tube which is best adapted for therapeutic purposes. By the kind of tube I do not refer to the particular pattern, but rather to the condition of vacuum which is best suited to our purpose.

Tubes have been divided into three classes—soft, medium, and hard, the terms having relation to the degree of vacuum. A tube in constant use rapidly passes from one condition to another, but it has been pointed out by many observers that a soft tube is much more likely to produce dermatitis than either of the others.

A soft tube is one in which the violet cathode rays can be seen passing between the cathode and anti-cathode, and which shows the bones of the hand black upon the screen.

A medium tube is one in which no violet cathode rays can be seen, and which renders the bones transparent.

A hard tube can only be excited with difficulty, and frequently has to be heated before a spark can be made to pass through it. This last is by far the best for therapeutic purposes; and it is also by far the most difficult to deal with successfully.

In a paper which I read before the British Medical Association at the annual meeting at Portsmouth in 1899, I stated that, in my opinion, the effects produced were largely due to the near presence of an electrical current of high potential; and although I drew attention to the fact that, sooner or later, I might have to modify those views, I am still of opinion that electrostatic, or electrolytic action plays some part in the production of the results.

It is exceedingly difficult to isolate the purely X-ray from the electrical effects, and much time must elapse before we are in a position to say what part each plays in the therapeutic effects produced. We have at hand ample evidence that the fine streamers which proceed from an "Oudins Resonator" have in themselves marked therapeutic effects; and although I have some evidence that the X-rays of themselves have similar properties, it is at present impossible scientifically to separate the one set of phenomena from the other. There are many points in the actual application of the X-rays to therapeutics which call for attention, not the least important being the best means of protecting the surrounding parts from the action of the rays. In my early experiments, when I worked with the intention of producing an actual X-ray burn, I adopted the plan of painting over the surrounding parts with a thick layer of either iodoform or bismuth, suspended in gelatine. (*Edinburgh Medical Journal*).

In these cases, one to three exposures, at a distance of one inch from a highly charged Crooke's tube produced the desired result; and the method adopted for protecting the healthy tissues proved highly satisfactory. With the continued treatment, such a method of protecting the healthy tissues involves far too much trouble, and screens or masks, covered with some more or less opaque substances, are now generally used. A hole is cut in the screen or mask, which allows the rays only access to the parts it is desired to treat. Tinfoil and sheet lead are the substances most commonly used, but I have found that dermatitis much more commonly follows the use of such screens than with those which, although less opaque, are non-conductors of electricity; and I cannot help thinking that as the metal covered screens become secondary condensors; which during the action of the tube are highly charged with electricity, they are apt to produce unlooked for results. If any portion of such a metal screen touches the skin a burning sensation is felt, and if continued for any length of time a dermatitis usually follows. I have obviated such a danger by enclosing the metal shield between two sheets of cardboard, or other non-conducting material; but screens made of gutta-percha, india-rubber, cardboard, or thin wood, painted with a thick layer of bismuth, or oxide of lead, have proved even more satisfactory. Masks have an advantage over screens, as they can be fixed to the parts, and obviate the tiresomeness of their having to be held in position.

The latest method I have adopted, and one which appears to have many and great advantages, is to enclose my tube in a box lined with some opaque substance, leaving only a hole in the front through which the rays can pass. This hole is preferably made circular, and is so arranged that tubes of varying length, made of vulcanite or cardboard, can be fixed in them as desired. The tubes themselves are also lined with opaque material to within a quarter of an inch of their free ends. The advantages of this method are that the patient can hold the part it is wished to expose to the rays to the end of the tube, without any fear of getting too close, and diaphragms of varying size can be used over the end of the tube to protect the surrounding healthy skin.

I have devised an apparatus (Fig. 4) for holding such enclosed tubes in position for therapeutic purposes, or it can be utilised for taking radiographs. Negatives produced in this manner are much more sharp than those taken by the ordinary methods.

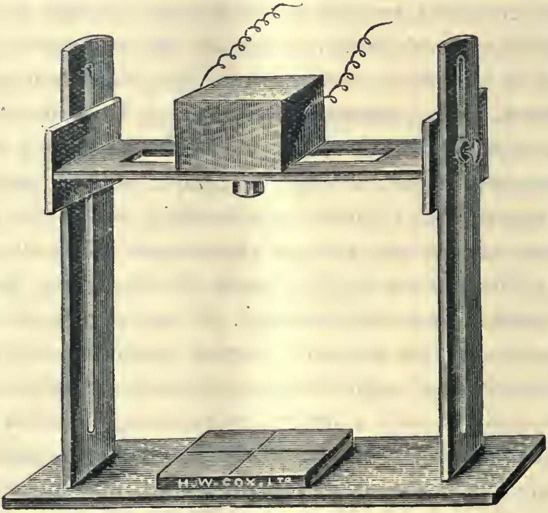

FIG. 4.

THE "HALL-EDWARDS" THERAPEUTIC, LOCALISING, AND STEREOSCOPIC, X-RAY TUBE HOLDING STAND.

The box containing the tube is square, and is held in position upon the stand by runners. The tube can (by altering the position of the box) be pointed in any desired direction, as the necessities of the case under treatment may require.

In later experiments, I have packed my tube in the box with a non-conducting, opaque material, which appears to yield even better results. I shall hope, however, to be able to say more on this point later on.

I have not the slightest hesitation in saying that the results obtained by these methods are much more satisfactory, and the freedom from risk of producing an accidental dermatitis is a great relief to the surgeon.

There is a similarity in the effects produced alike by the light treatment and the X-rays, to which I should like to draw your attention. This is the production of pigmentation. This naturally differs in different individuals; but it is rarely entirely absent in any case, which is being benefited by either method of treatment, and I always look upon its production as a favourable sign.

Patients differ to a very marked degree in their susceptibility to the influence of the X-rays; and it is necessary at first to proceed with great caution, if disastrous results are to be avoided. One application of ten minutes' duration, at a distance of eight inches from the tube, may produce a dermatitis in one case; whilst in another, six or eight applications may be administered under exactly the same conditions without producing any recognisable effect.

Albers Schönberg, who has successfully treated a large number of cases of lupus with the X-rays, lays great stress upon the undesirability of setting up a dermatitis. He disapproves of using heavy currents, and points out that in his experience no beneficial effect is produced on lupus of the nasal mucous membrane. In this latter contention I agree with him; at the same time, I should like to point out that some of my best results have been obtained in cases in which the mucous membrane of the lips was affected.

I disagree with him entirely as to the effects of setting up a limited amount of dermatitis in cases of lupus. In these cases the dermatitis produced differs considerably from that produced accidentally upon healthy skin. It quickly heals, and the ulceration is superficial. Taking into consideration the older, and more or less successful methods of treating lupus, such treatment would certainly not be taken as being unscientific, and I see no reason why a limited amount should not be purposely produced. Indeed, in cases in which there is one small or medium sized patch, situated anywhere but upon the face, I have no hesitation in destroying the whole area at one exposure, of from fifteen to twenty minutes, at a distance from one to two inches from the tube. In my first experiments some four years ago, I produced in each instance an extensive X-ray burn by giving two or three such exposures, the distance between the skin and the tube being only one inch. The ulcers formed took months to heal, and although the final results were good, I should not advise such treatment in any but exceptional cases. In certain forms of superficial cancer, such treatment might possibly prove beneficial.

As regards lupus and rodent ulcer, there can be little doubt that in the X-rays we have a therapeutic agent of considerable value, and whilst I would not (at present) go so far as to state that all other methods of treating these diseases should be abandoned, I feel certain that in conjunction with the already accepted methods, it will be proved that these troublesome diseases have lost some of their terrors. The scar tissue which follows the successful treatment of lupus by the X-rays is soft, pliable, and natural in colour. There is no contraction, no loss of tissue, and the pigmentation produced, disappears in the course of time. Whether or not, the results produced are permanent, yet remains to be proved; but even granting that they are not, the relief obtained is far greater than that produced by any other method (with the exception of that which follows the light treatment), and as I have before stated every successful case which has been publicly exhibited is the outcome of the two methods combined. Recently it has been stated that the treatment of lupus erythematosus has not been successful. Many cases of cure have been reported from the Continent and America, and some 3½ years ago I treated one with complete success. The disease has not recurred and the patient is now in perfect health.

During my absence in South Africa I had to completely discontinue my experiments; since my return, however, I have treated a large number of cases with varying results. On the whole they are satisfactory, but in a few little response has followed the treatment. This may be due to the non-efficiency of my methods, to the fact that some cases are not in any way effected by the X-rays, or to the treatment not having been sufficiently prolonged.

In describing the phenomena which follows the successful application of the X-rays, some observers have stated that the healing process always commences in the centre of the patch under treatment, and that the edges are driven out, and are only dealt with, with considerable difficulty. In my hands the opposite result has been obtained. My cases as a general rule commence to heal from the edges of the patches, and whilst a few nodules may remain uneffected, the healing process gradually extends inwards. I attribute the effects described to the using of too small a hole in the screen or mask. My invariable rule is to expose at least a quarter of an inch of healthy (or apparently healthy) skin beyond the defined margin of the patch. Should the screen be smaller than the patch it is obvious that its centre gets more exposure to the rays than its edges, and the result complained of is only what can be expected.

In treating a small patch, the hole in the screen should be larger than the area of the disease, and if it is thought unwise to treat the whole of the diseased surface at once, treatment should be commenced at its edges. It generally happens that one or two isolated nodules remain after the general surface is cured. These are most difficult to deal with, and a change of treatment is indicated. The reason for the escape of these nodules is not forthcoming, but it may be due to their implicating the deeper layers of the skin, which have not been touched by the treatment. It is curious to note that whilst the X-rays pass completely through the parts submitted to them, it is only the superficial surface which is markedly effected. This fact of itself goes to prove that electricity plays no small part in the production of the results, as one would imagine that the whole thickness of the tissues must to an extent be effected, if the X-rays themselves alone are concerned.

The excellent and successful results obtained in the treatment of rodent ulcer by the X-rays point to a well nigh specific action in this particular disease, and inasmuch as it is closely allied to cancer, we had good grounds for hoping that in certain forms of this terrible malady some good results might accrue.

Our predictions in this direction have already proved true, many cases of cure having already been reported, and in cases in which all hope of cure had been abandoned considerable relief has been afforded. So far, most of the cases in which relief has been obtained are of a superficial character, but we have some evidence that deeply seated lesions are to an extent effected. We have good reason to believe (from experimental evidence to hand) that continued research in this direction will yield even better results than those already obtained, and although we cannot dare to hope that all forms of cancer may be relieved or cured by X-ray treatment, the results secured are sufficiently encouraging to warrant continued research. In several cases which have come under my notice, pain, which could not be relieved by drugs, has disappeared after a few exposures, even in cases in which the disease was so far advanced that all hope of successful treatment had been abandoned.

A large number of cases have recently been published by Dr. Morton of New York. In each, considerable relief was obtained from the treatment. The growths diminished in size, and the pain disappeared.

At the present time there is a considerable difference in the methods adopted by various observers, but all agree that in the X-rays we have a promising therapeutic agent for combating the most fearful diseases known to surgeons. A modification of our methods may bring about better results, and inasmuch as in skilled hands the X-rays can do no harm, there is no reason to justify their application in any case which, in the ordinary condition of things, has been pronounced inoperable.

The application of light and the X-rays to therapeutics is as yet in the experimental stage, and although the results produced are more than satisfactory, it is impossible to lay down any definite rules of procedure. In the near future I hope to lay before you a more complete plan of campaign, and I must impress you with the fact that some of the statements made herein may have to be contradicted; or at any rate materially modified.

REPORTS OF CASES.

A CASE OF FAINTING AND ANOTHER OF VOMITING AFTER OPERATION UNDER ETHYL CHLORIDE NARCOSIS.

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AFTER-EFFECTS from short ethyl chloride narcosis are usually absent altogether, and if present are slight, because elimination from the lungs is very rapid. After administration no traces of the drug can be found in the secretions. Speaking very generally, the sequelæ of narcosis vary as the length of administration, the quantity of the drug used, and the type of patient. The longer administrations are more likely to cause sequelæ, though in my longest case, that of a weak old woman, æt. 60, to whom I gave ethyl chloride for about seventeen minutes, there was no after-effect at all, but immediate and full recovery, and ability to take a meal 1¼ hours afterwards. Nausea, vomiting and headache are the commonest after-effects. Nausea generally passes off within an hour while vomiting usually only occurs once or twice. Faintness is very rare. One or two of my patients who had previously had nitrous oxide decidedly preferred ethyl chloride. It is said by one or two foreign observers that the usual after condition is a feeling of well-being and often of hunger. Marshall of Liverpool, in a series of about fifty administrations, records two cases of accusation of indecent assault as the only noteworthy sequelæ.

The only two instances in which I could possibly attribute, out of 55 cases, any serious post-anæsthetic effect to ethyl chloride are the following:—

1. A nervous youth, æt. 17. Removal of adenoids and tonsils. Patient was tall, ruddy, and had a high narrow palatine arch. Nothing abnormal was found in his chest. In 1½ minutes he

went quietly under, *i.e.*, the conjunctival reflex was absent, the pupils were of moderate size, the facial colour was improved, pulse and breathing were regular, the skin sweated slightly and the muscles were lax. The mouth was opened by a Mason's gag, and the operation, which lasted one minute, was done under full anæsthesia, after which the patient recovered consciousness in half a minute. There were no immediate after-effects, and he walked back to bed ten minutes later. In two hours time he insisted on going home to a place eight miles away, and fainted in the cab on his way to the station and again in the train, also defæcating in one of these attacks.

It is difficult in this case to reckon the part played by the anæsthetic in the production of syncope, but I think that it may have had some influence.

2. A delicate nervous girl, æt. 11, who had not had an anæsthetic before. She had been prepared for operation in the usual way. Operation for necrosis of the os calcis. I began the administration in the anæsthetic room and one minute after wheeled the patient into the theatre, keeping her lightly under for the cleansing and first part of the operation, *i.e.* allowing a brisk lid reflex and moderate rigidity of the limbs. The colour was improved, respiration vigorous, and the pupils well contracted. After five minutes I kept up deeper anæsthesia, as shown by very slight or absent lid reflex and lax limbs. The operation lasted nine minutes, and I used altogether 9 c.c. of ethyl chloride, some remaining over on the mask. The child was about one minute in recovering consciousness, and then vomited some mucus. I saw her about half an hour afterwards in the ward and found that she had been vomiting a little fluid; her complaint was of wound pain and sickness. On enquiry next day, I was told that she had been vomiting at frequent intervals for thirty hours, bringing up at once all food that she was given. All attempts to stop the sickness by a mustard leaf over the stomach, hot water, bismuth and soda, failed. At last after taking some albumen water (which is, I understand, the whites of three eggs mixed with a pint of hot water) the vomiting

ceased. The ward sister told me that albumen water often lessens or stops post-anæsthetic sickness, but whether it was a case of *post* or *propter hoc* is not certain. Next morning the child was well and hungry.

I am inclined to think that this nervous delicate child, like others of her sex of similar temperament and unstable digestion, would have been sick after most anæsthetics, though whether so severely as after ethyl chloride, of course, I cannot say.

Since the above notes were written and about seven months after the first operation, the patient had ether preceded by a little chloroform administered for a second operation on the leg, and vomited just as much and for as long as after ethyl chloride. On yet another recent occasion there was severe vomiting after another anæsthetic than nitrous oxide or ethyl chloride. Thus it would seem that in this case at any rate the latter drug did not lead more than others to after vomiting, which I believe was largely due to exceptional nervous or stomachic sensibility.

MEDICAL ABSTRACTS.

BY JAMES MILLER, M.B.,
ASSISTANT LECTURER ON PATHOLOGY IN THE
UNIVERSITY OF BIRMINGHAM.

Chloroma—(Rosenblath and Risel, *Deutsches Archiv für klinische Medicin*, *Bd.* 72, *Heft* 1. Byrom Bramwell, *Scottish Medical and Surgical Journal*, March, 1902. Melville Dunlop, *British Medical Journal*, May 3rd, 1902).

This disease is of interest not only from its rarity, only some twenty-seven cases having been recorded, but also from its relation pathologically to lymphosarcoma on the one hand, and to lymphatic leukæmia on the other. It is characterised by the following symptoms. The patients are usually children, and the majority have been males. There is a marked protrusion of one or both eyeballs, which is associated with pain, and later with blindness and optic neuritis. Deafness has occurred in most of the cases. The cervical glands are often enlarged. The skin and mucous membranes show petechial hæmorrhages, and sometimes small nodules, which may have a green colour. The blood shows certain definite changes. The number of red cells is markedly diminished, sometimes being as low as 1,000,000. Nucleated reds are frequently present. The amount of hæmoglobin is also greatly diminished. The number of whites may or may not be increased; but whether increased or not, there is a relatively great diminution of the polymorphonuclears and small lymphocytes, and a relatively great increase of the medium and large lymphocytes. The number of whites may reach 300,000 per c.mm. Myelocytes are sometimes present. The disease is rapidly fatal, usually within four months.

Post mortem there are found growing from the bones of the skull in various positions, tumour masses apparently of a lymphoid nature and of a greenish yellow colour. A usual site is the orbital cavity, the presence of the tumours giving rise to the protrusion of the eyeball. They may also grow from the nasal bones, or from the palate. Similar masses occur in the vertebral canal, often compressing the cord and causing ascending degeneration. They also occur in front of the vertebral column, and may also grow from the sternum. The lymphatic glands of the body are usually all more or less enlarged, and present the peculiar green colour. Metastases of the tumour, also presenting the green colour, occur in heart, liver, and kidneys. The heart in addition shows fatty degeneration. The spleen is enlarged. The bone marrow also shows the green colouration.

Microscopic examination of the tumour shows that it consists of (1) cells which are about the size of a large lymphocyte: they are round with a relatively large nucleus which stains fairly deeply; (2) a supporting stroma which recalls that of a lymph gland; (3) rounded clusters of granules of a fatty nature, staining faintly with osmic acid and sudan iii, lying between the cells. These granules are, however, not invariably present. The metastases in the different organs show a similar structure. The lymph glands show hyperplasia with large round cells in their sinuses similar to those of the tumour. These cells also occur in the sinuses of the spleen. The bone marrow also shows large numbers of similar cells, and there are distinctly fewer nucleated reds than usual.

With regard to the nature of the disease and its position in pathological classification, there is some difference of opinion. Bramwell and Dunlop seem to consider that chloroma is closely related to leukæmia, the former stating that they are different grades in the same pathological process. The two German authors on the other hand are inclined to place the disease among the lymphosarcomata, calling it chlorolymphosarcoma. They base this opinion on the fact that the leukæmic condition of the blood is not invariably present in the disease, and that when present it occurred in several cases only a few days before death. A similar phenomenon has been noticed in ordinary cases of lymphosarcoma. The appearance in the blood of an excess of lymphocytes is therefore, according to them, a purely secondary condition. Risel, finding in his case that the mesenteric glands were tubercular, and finding that tubercular lesions had been described in connection with other cases, lays some importance on this as a primary cause.

With regard to the cause of the peculiar green colour of the tumour masses and their metastases, there is also a difference of opinion. Huber, Chiari, and recently Höring considered that the colour was connected with the little masses of peculiar granules found between the cells of the tumour, but these are not present in all cases. Waldstein thought it was a derivative of blood pigment. The colour rapidly fades on exposure to the air, but partially returns on treatment with a reducing agent, indicating the presence of an oxidizable pigment. Huber, Chiari, Höring, and Dunlop suggest that it is some chemical product allied to lipochrome.

The Relation of the White Blood Corpuscle to several Surgical Diseases, especially to Appendicitis.—(Wassermann, *Münchener Medicinische Wochenschrift*, May 6th, 1902.)

This paper is specially interesting in view of Hewetson's work published in the *Birmingham Medical Review* of March and and April. It is the result of extensive investigations carried out in the surgical Klinik in Munich. The instrument used in counting was the Thoma-Zeiss hæmocytometer. As the result of 400 counts on 47 different normal individuals, 4,000 and 11,000 per cubic millimetre were taken as the limits of the leucocytes under normal conditions.

The author commences by giving a *résumé* of a paper by Curschmann (*Mün. Med. Wochensch.*, 1901, 48 and 49) where it is stated, as the result of observations on sixty cases, that "in the vast majority of cases the leucocyte count gives a means of certain diagnosis between simple fibrinous exudation and abscess formation, where other signs and symptoms leave one in doubt." Curschmann fixed the boundary line at 20–22,000, a persistent count of 25,000 meaning pus. Wassermann gives in detail ten representative cases with daily leucocyte counts, and he draws the following conclusions from them.

The leucocyte count is of the greatest importance in cases of ileo-cæcal suppuration, as a high count will frequently indicate the presence of pus when temperature, pulse, and other clinical signs give no such indication. This independence of the leucocytic from the other signs and symptoms gives a delicacy to the leucocyte count as an assistance to diagnosis, which is possessed by none of these symptoms and signs.

Wassermann deprecates Curschmann fixing a definite limit between suppurative and non-suppurative, as in two groups of cases a low leucocyte count may be quite compatible with pus. The first group is where the organism has failed to react to the poison; the other, where the pus has become encapsuled by dense adhesions.

The leucocytosis of appendicitis consists in an increase of the polymorphonuclear neutrophyl leucocytes, and cannot be distinguished from the leucocytosis of other inflammatory conditions.

Investigations of the pus in the several cases showed many kinds of organisms. Somtimes B. coli in pure culture, at other times strepto-cocci. B. pyocyaneus was found in one case (first recorded case); B. proteus was present in pure culture in more than one case (only one previously recorded case); anaërobic organisms were frequently found. The form of organism present had no influence on the number of leucocytes.

Comparison with other surgical diseases showed that traumatic irritation of the peritoneum gave only a slight increase in the number of white cells. Other suppurative conditions—paranephritic abscess, suppurating cervical glands, abscess of the prostate, mastitis (three cases of staphylococcus infection, all under 15,000)—showed only a moderate leucocytosis. Cases of septicæmia and erysipelas showed a marked leucocytosis (20–30,000).

These results agree in all important points with those of Hewetson.

Paratyphoid.—(Brion and Kayser, *Münchener Medicinische Wochenschrift*, April 15th, 1902.)

This case is of importance from the point of view of the reliability of the Widal reaction, and the exact meaning of a negative result. It indicates that it is by no means certain that we have an unchanging species in the bacillus typhosus. Many bacteriologists hold that there is no reliable means of distinguishing between B. coli communis and B. typhosus, that on the contrary the two are modifications of the same organism, and that transformation from the one into the other is not impossible. Pathologists are inclining more and more to the idea that typhoid is a septicæmia more than a mere intestinal lesion; that, in other words, it is the entrance into the blood of a pathogenic organism, rather than the formation of intestinal ulcers, which produces the symptoms included under the word typhoid. The Widal reaction is a specific one, that is, it is given by the serum of a typhoid patient with the B. typhosus not with the B. coli, and it is probable that it would not be given with intermediate forms. We are thus prepared for conditions having the symptoms and signs of typhoid, but not giving the Widal reaction. This case also illustrates the importance of examining the blood bacteriologically in obscure conditions. Similar cases to the following have been described by Schottmuller (*Zeitschrift f. Hyg. Bd.* xxxvi, p. 368, and *Deutsch. Med. Wochensch.*, 1900, No. 32) and others. Schottmuller collected six cases and separated two types of typhoid-like organisms, A and B.

The case reported by Brion and Kayser was that of a girl, æt. 16, who on admission was at first found to be suffering from a typical gonorrhœa of urethra and vagina. Her temperature rose suddenly, her spleen became enlarged, an irregular fever continued for five days; patient was discharged after a week. The vaginal condition had disappeared under treatment. In three days the patient came back. Fever was again present and continued for a week, when a typical typhoid rash appeared. The blood was examined bacteriologically, and was found to contain a typhoid-like bacillus. The serum of the patient agglutinated none of the cultures of the B. typhosus in the bacteriological institute, but it agglutinated this bacillus. The same organism was discovered in the spots, also in the pus from the urethra and vagina, gonococci being no longer present. Blood counts showed reds 4,000,000, whites 5,500. The fever gradually disappeared. From the urine a typhoid-like bacillus was cultivated. Some days later the temperature again rose suddenly to 39·9° C., but again fell. Bacteriological investigation of the urine showed it to be sterile. A few days later there was another rise of temperature and another outbreak of rash. The serum of the patient had no agglutinating action on typhoid bacilli. Temperature again fell to normal after five days. A fortnight later the patient left the hospital.

On two occasions blood was withdrawn from the veins of the arm under the usual precautions, and cultures made on blood agar. After forty-eight hours, light grey colonies were seen. Further examination showed the presence of a typhoid-like bacillus. Cultures from the spots and urine showed a similar bacillus, also cultures from the fæces on one occasion.

The bacillus, which is Gram negative, is actively motile, and resembles B. coli in form and size. It grows well at 37°, also at 21°. Colonies on gelatine are about the size of a pin head after twenty-four hours; they are light grey and transparent. The growth is less active than bacillus coli. Indol is not produced. Milk remains unchanged. Growth on potatoes is similar to that of B. typhosus. In dextrose and maltose media, acid is developed; also gas. Pathogenicity for white mice and for guinea-pigs is considerable; less so for rabbits. Experiments showed that pus was developed at the seat of inoculation. General infection was also produced, and the organism was cultivated from heart, blood, and spleen.

Agglutination phenomena.—One part of the serum of the patient to 1,000 parts of a twelve hour bouillon culture of the bacillus showed rapid agglutination microscopically. Similar marked agglutination was shown by serum of rabbit obtained by repeated subcutaneous injections of dead cultures of the paratyphoid. Specimens of Schottmuller's cultures (types A and B) were obtained. The serum obtained from the rabbit agglutinated type A in a proportion of 1 : 750 macroscopically; 1 : 1,000 microscopically. Type B was not agglutinated. None of the races of B. typhosus in the laboratory were agglutinated. On the the other hand, typhoid immune serum did not agglutinate B. paratyphi.

On reconsidering the case clinically, parts of the temperature chart were like typhoid. The pulse was typhoid-like. There was no diarrhœa. The tongue was not like that of a typhoid patient. The leukopenia was, however, in favour of typhoid. The roseola and enlargement of spleen were, however, very characteristic. The bacilli were found in the vagina, but that is no proof that it was the primary site of infection. In only one out of three attempts was the organism found in the fæces, but this is no proof that the infection was not from the intestine. Similar cases have been recorded by Kurth (*Deutsch. Med. Wochensch.*, 1901, 30 and 31).

REPORTS OF SOCIETIES.

British Medical Association.

Birmingham and Midland Counties Branch.

Session 1901–1902.

The Sixth Ordinary Meeting of the Session was held in the Birmingham Medical Institute, on March 13th, 1902, Dr. E. Malins, President, being in the Chair.

Forty-nine members were present.

Confirmation of Minutes.—The Minutes of the previous meeting were read, confirmed, and signed.

Nomination of Officers for 1902–1903.—The following nominations were received, namely:—

President-Elect.—Mr. Jordan Lloyd; *Treasurer*, Mr. F. Marsh; *Hon. Secs.*, Mr. J. T. J. Morrison and Dr. T. Sydney Short.

Representatives in the Council of the Association.—Mr. Langley Browne, Mr. W. F. Haslam, Mr. Jordan Lloyd, Mr. E. B. Whitcombe.

Representatives on the Parliamentary Bills Committee.—Mr. S. H. Agar, Senr., Mr. Gilbert Barling, Mr. J. T. J. Morrison.

Country Members of Council.—Dr. E. Deanesly, Mr. A. Freer, Dr. J. H. Joy, Mr. M. A. Messiter, Dr. Milner Moore, Dr. E. N. Nason, Mr. J. F. G. Pietersen, Dr. T. W. Thursfield, Mr. F. W. Underhill, Dr. T. E. Underhill.

Town Members of Council.—Mr. H. Eales, Dr. A. Foxwell, Mr. G. Heaton, Dr. E. D. Kirby, Dr. H. R. Leech, Dr. R. F. C. Leith, Mr. C. Martin, Mr. Bennett May, Mr. R. A. Newton, Dr. E. Rickards, Dr. J. W. Russell, Dr. R. Saundby, Dr. T. Stacey Wilson.

Ethical Committee.—Mr. Langley Browne, Mr. M. Hallwright, Mr. W. F. Haslam, Mr. M. A. Messiter, Mr. A. Oakes, Dr. R. Saundby, Mr. Priestley Smith, Dr. T. W. Thursfield, Mr. W. P. Whitcombe.

EXHIBITION OF SPECIMENS, ETC.

Sarcoma of Ovary.—Dr. Smallwood Savage showed a Solid Ovarian Tumour, which he had removed in August, 1901, from a patient, æt. 48. She had had eight children, the last, ten years ago. The menopause occurred 8½ years before, and she had seen nothing for 6½ years, when menstruation began again, and continued regularly until the time of operation. A swelling of the abdomen had been noticed five months, and a firm tumour was felt rising out of the pelvis and reaching one inch above the umbilicus; it was distinct from the uterus. Ovariotomy was performed and the patient made a satisfactory recovery. The tumour was almost completely solid, and contained only a few cysts; it was bilobed in form, and about the size of an adult head; there was one adhesion to the rectum. On section, there was a firm fibrous capsule, below which the surface presented a uniformly granular appearance. On microscopical section, the growth showed a fine reticular meshwork containing small angular or oat-shaped cells. There were no epithelial cells. Only the left ovary was affected, the right being small and normal in appearance; this latter was not removed.

Popliteal and Gluteal Bursæ.—Mr. Jordan Lloyd showed a Bursa, which he had removed entire from beneath the semimembranous tendon; and a similar specimen dissected from under the ischial tuberosity.

Sarcoma of Fibula.—Mr. Jordan Lloyd also showed a specimen of Sarcoma of the lower end of the Fibula, which he had treated by free excision of the affected bone.

Modification of Scarpa's Shoe.—Mr. W. E. Bennett showed the apparatus he had devised for increasing the efficiency of Scarpa's Shoe.

PAPERS.

Rectal Carcinoma, and the prolongation of life by Colotomy.—Mr. F. Victor Milward read a paper with the foregoing title, under the following headings:—

Rectal Carcinoma compared with other rectal diseases. Brief pathology. Different forms assumed by growths, with their different clinical symptoms. Implication of glands. Diagnosis. Growths involving first part of rectum, more difficult to diagnose. Statistics of all the cases of Carcinoma admitted to the General Hospital, 1898–1900. Statistics of 100 cases of Rectal Carcinoma admitted 1895–1900, and a comparison between these and Carcinoma of the rest of the alimentary canal treated during that period. Cases traced after Colotomy, showing subsequent duration of life.

Mr. Jordan Lloyd, Mr. G. Heaton, and Mr. W. E. Bennett took part in the discussion; and Mr. Milward replied.

Phthisis and Sanatoria.—Mr. Alfred Freer read a paper on this subject, with the following points :—

Sanatorial exile; how long? No analogy between Phthisis the Chronic and Scarlatina the Acute.

Modern dictum, "Consumption infectious," not proven. Scare about tuberculous milk-poisoning needless.

Objections against notification of Phthisis.

Sanatorial Retreats, blessings to the poor in the advanced stages of Phthisis.

Bacteriologists speak too *ex cathedrâ.* Science infallible, but not all its interpreters.

The paper was discussed by Dr. Kauffmann, Dr. Kirby, Mr. Oakes, and Dr. Rickards; and Mr. Freer replied.

KIDDERMINSTER MEDICAL SOCIETY.

A Meeting of this Society was held on Friday, April 11th, Mr. W. J. LIONEL STRETTON, President, in the chair.

The President showed :—

1. A Large Gall Stone, weighing 280 grains, removed from a lady, æt. 60. When seen in consultation, she was suffering from acute obstruction of the bowels. The stone was found jammed in the lower part of the ileum, and was removed by incision of the intestine. The patient made an uneventful recovery.

2. An Enlarged Ovary removed from a girl, æt. 23, on account of chronic pain, with complete relief of her symptoms.

3. Two Appendices Vermiformes. The first was removed from a lady, æt. 46. There had been only one acute attack previous to the operation. The appendix was over three inches long, and was firmly attached at its apex to the uterus. Recovery was uneventful. The second was removed from a boy, æt. 5. The abdomen was opened for suspected tubercular mischief, and a large number of enlarged mesenteric glands were discovered. The appendix was fully four inches long and bulbous at the top, and it was therefore removed. Recovery was rapid, and the boy was very much improved in health.

4. Part of the Femoral and Popliteal Arteries from an amputated lower limb of a woman, æt. 50. She had suffered from rheumatic fever. She was suddenly seized with acute pain in the left leg, which rapidly became gangrenous, and was amputated six days later. The vessel was filled with clots, from the site of operation at the upper third of the thigh to below the bifurcation of the popliteal artery.

5. Two inches of the Rectum removed from a woman, æt. 48. Two months previously, on January 20th, a small pedunculated fibroma was removed, and the pathologist reported that a portion of the base was malignant. As this area continued to give trouble and was felt to be indurated, it was decided to remove the bowel. The sphincter was left, and the bowel stitched down to the edge of the skin.

6. The right lobe of a Thyroid removed from a girl, æt. 15, about the size of an orange. After apparently healing by first intention, at the end of ten days there was a sudden rise of temperature, and suppuration commenced. Mr. Stretton commented on the frequency of late suppuration in such cases, and suggested, as a contributory cause, the impossibility of securing complete rest.

7. A girl, æt. 24, upon whom he had operated for Gastric Ulcer. She had suffered from two previous attacks of hæmatemesis, and after a severe attack on Feb. 29th, she was removed

to the hospital for observation. On March 3rd, she had a sudden attack, vomited about two pints of blood, and became so collapsed that the House Surgeon thought she was dying. Mr. Stretton saw her about an hour later, and about two hours afterwards, after a hypodermic injection of liq. strych. ♏x and saline transfusion, opened the abdomen. Nothing was discovered by external examination of the stomach, so a longitudinal incision was made in the anterior wall, and a systematic examination made. The bleeding surface was discovered on the posterior wall. It was about as large as a florin, and consisted of an abrasion of the mucous membrane, showing the mouths of arterioles from which blood was freely flowing. Such a condition is described by Dieulafoy as "Exulceratio Simplex." The portion of stomach was inverted and several silk sutures were passed under the bleeding area and tied over it. The wound in the stomach was closed with a double row of interrupted sutures, and the abdomen closed. The girl was very collapsed for the first twenty-four hours, but had made an uninterrupted recovery.

Mr. Naylor read notes of a case of Tetanus, which had arisen from a boil on the back of the neck, in a boy, æt. 15. Difficulty of swallowing and stiffness of the jaw began ten days after the appearance of the boil. Opisthotonos and rigidity of the muscles of the forearm rapidly supervened, and three days later he had two clonic convulsions. The attacks continued increasing in severity until he died from exhaustion seventeen days after the appearance of the boil. He was treated with gr. 15 doses of chloral and potassium bromide four hourly, ¼ gr. hypodermic injections of morphia, which controlled the spasms somewhat, inhalations of chloroform, and six doses in all of 1500 units of anti-tetanic serum.

A discussion on Vaccination followed, which was opened by Dr. Evans.

REVIEWS.

THE STUDY OF THE PULSE, ARTERIAL, VENOUS, AND HEPATIC, AND OF THE MOVEMENTS OF THE HEART.*

THE admirable treatise on the pulse just published by Dr. Mackenzie throws not a little new light upon the working of the heart under normal and pathological conditions. The labour involved in this minute and detailed investigation must have been enormous, and the greatest credit is due to the author, not only for the magnitude of his work, but also for the thoughtful and ingenious interpretations which he has suggested of the phenomena observed. Moreover, he has treated a subject, which must necessarily be somewhat dry, in the least possible dry manner; and his writing is so clear that even those who are unaccustomed to the study of heart and pulse tracings will follow his reasoning without difficulty.

After describing the instrument by means of which he has obtained most of his tracings, Dr. Mackenzie devotes a short chapter to the interpretation of an ordinary sphygmogram. We note with interest his demonstration of the fact that the phenomenon of dicrotism, which is usually exaggerated by the lowering of arterial pressure, yet becomes almost absent when this pressure is reduced beyond a certain limit. Hence he points out that its complete absence may be an ominous sign, as at the beginning of an attack of pneumonia, and that its reappearance would then be a fact of good significance. Hyperdicrotism is believed to be merely a result of quickening of the pulse. In the succeeding chapter, Dr. Mackenzie shows that there is an actual drawing up of the liver during ventricular systole, not a downward thrust, as is usually believed. The epigastric pulsation due to a dilated right ventricle is similarly shown to take place in the reverse order of what is usually imagined, the retraction of the epigastrium, not the protrusion, corresponding to the carotid pulse. Some interesting observations on the apex beat bring this chapter to a close.

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* The Study of the Pulse, Arterial, Venous, and Hepatic, and of the Movements of the Heart. By James Mackenzie, M.D. (Edin.). Edinburgh and London: Young J. Pentland. 1902.

The next four chapters deal with certain other features of the normal pulse, but in the ninth chapter the more typical part of the writer's work begins, in the investigation of some of the phenomena of pulse irregularity. Two main types are recognised, namely, (1) the youthful type, in which irregularity occurs through variation in the duration of the diastolic period of the cardiac cycle; and (2) the adult type, where there is a variation in the duration of the systolic as well as of the diastolic period. In the latter, the small imperfect beat is shown to be due to an incomplete and premature ventricular systole. In the third part of the book, which is entirely given up to the investigation of pulse irregularities, these phenomena are studied with the help of the venous pulse, and the cases are further classified as follows: (1) cases in which the auricles and ventricles both participate in the irregularity; (2) cases where the auricle preserves its rhythm during irregular action of the ventricles; (3) where the ventricle fails to respond to the stimulus of the auricular systole; and (4) cases where the auricles are paralysed. This investigation has involved a large amount of original research, and is followed up with great minuteness of detail.

The tenth chapter deals with the clinical significance of irregularity, and it is instructive to note that Dr. Mackenzie considers the distinction usually made as concerns prognosis between an irregular and an intermittent pulse, to be purely artificial. The appearance of an irregular pulse in cases of fever may, he thinks, sometimes be a good sign, as being due to a slowing of the heart beat. Irregularities occurring in pneumonia and in chloroform anæsthesia are specially considered. Chapter XI deals with the subject of increased frequency of the pulse, and in it the author suggests that attacks of paroxysmal tachycardia are really due to a long-continued series of premature systoles. The next two chapters deal with diminished frequency of the pulse, and the pulse in febrile conditions; and this first section of the book is brought to an end by a consideration of some of the more characteristic pulses and the relation of the pulse to the respiration.

The second part of the book deals entirely with the venous and liver pulses. The venous pulse is taken from the jugular veins, and, when it occurs, shows the existence of a free communication between them and the right auricle. Hence, the venous pulse represents or registers the variations of pressure occurring in the right auricle during the cardiac cycle. Two main waves are generally to be seen in tracings of the jugular pulse, one, due to the systole of the auricle, and the other caused by its gradual filling. This latter wave is of course much exaggerated in cases of tricuspid incompetence, owing to the extra quantity of blood received from the right ventricle. It is interesting to note that in the worst cases of tricuspid incompetence the former, or auricular, wave becomes lost, showing that the progressive over-distension of the auricles ultimately results in their more or less complete paralysis. Dr. Mackenzie suggests that in this paralysis lies the explanation of the disappearance of the presystolic murmur in advanced cases of mitral stenosis, and in a later chapter he states that a presystolic murmur is never present when the auricular wave is obliterated. Such paralysis occurs only in cases of long-standing mitral disease with well-marked hypertrophy of the ventricular muscle. In cases of weakening or degeneration of the muscle, the force tending to over-distend the auricles is of necessity less, and they remain active to the end. The liver pulse is similarly only met with in cases of long-standing valvular disease, and is absent in cases of muscle failure.

The presence or absence of the auricular wave distinguishes two classes of venous pulse, and, as contended by Dr. Mackenzie, the significance of the distinction is very considerable. The clinical bearing of the matter is fully discussed in the three last chapters of this part of the book. These chapters also take into consideration the meaning to be attached to the existence of the liver pulse and its varieties.

The third part of the treatise is, as we have already stated, devoted to the further examination of pulse irregularities, and we have given an outline of the main distinctions which are described.

Our review gives but a very rough sketch of some of the leading points of this very important book. Both for its scientific value and the practical clinical outcome of its researches, it deserves to be widely and carefully studied.

THE TREATMENT OF INJURIES BY FRICTION AND MOVEMENT.*

In this little volume Mr. Wharton P. Hood deals with a branch of surgery, in which he has undoubtedly had a very large experience. We notice with some interest that he introduces his subject, by alluding to the circumstances under which his knowledge and treatment have received much modification.

The fact that one of the medical profession should have spent about two years in watching and profiting by the proceedings of a bonesetter, demands, we think, a little enquiry, and not merely a scornful rejection. It suggests the uncomfortable feeling that the student of medicine, with all his systematised study in practice and theory, can, or rather could twenty-five years ago, learn much from a dalesman whose knowledge could only have been acquired through pure empiricism, based upon dim ancestral traditions. Mr. Hutton may have been, and probably was, the best bonesetter ever born, and a perfectly honest man, and we do not doubt that some of his methods were correct, but we cannot forgive him, or others of his calling, the responsibility they incur, in treating diseases which they must at one time or another mistake for injuries.

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* The Treatment of Injuries by Friction and Movement. By Wharton P. Hood, M.D., M.R.C.S., L.S.A. London: Macmillan and Company.

There is much of truth in Mr. Hood's methods of treatment, which are now adopted by many English surgeons, thanks to the example of Lucas-Championnière. Mr. Hood builds his whole theory of the value of early massage over strapping, and early voluntary movements, on the fact that venous stasis causes lack of repair and is due to muscular inhibition. He considers of secondary importance the actual laceration of muscular fibres, at the seat of fracture, and the extravasation which then takes place among them, and sees no advantage to be gained by bringing the bony surfaces into perfect apposition. If he is correct in this theory, early voluntary movements may be theoretically proper, but we cannot accept his doctrine in its entirety, however good may be the practical results. On the whole, this volume contains much that is useful and of practical value in the treatment of subcutaneous injuries of the limbs. We must, however, take exception to his treatment of fractures of the olecranon process and patella, which we are astonished to see described in any book on modern surgery. In the former, he considers wiring to be unnecessary, and "a good and useful joint will be procured, even if the ultimate separation should be as much as an inch." In speaking of fractured patella, the author tells us, that no attempt should be made to bring the fragments either into apposition, or even very near together.

The treatment of coccygodynia by merely correcting the displacement is also to us somewhat ambiguous.

A SYSTEM OF PHYSIOLOGIC THERAPEUTICS.*

In reviewing the former volumes of this series we described and commented upon the aims and intentions of the authors, so that it will not be necessary to say more on these points than that the present work is well up to the level of its predecessors. It deals with Dietotherapy under the two principal heads of: (1) General Principles of Diet, and Diet in Health, and (2) Diet in Disease.

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* A System of Physiologic Therapeutics. Vol. VI, Dietotherapy and Food in Health. By Nathan S. Davis, Junr., A.M., M.D. London: Rebman Limited. 1901.

The first part deals fully with food-stuffs taken seriatim, and much useful information is presented in a readable form. Dietaries and the actual value of the different food-stuffs are here considered, the articles on alcohol being especially interesting.

In the second part, diseases—or we might perhaps more truthfully say, conditions more or less removed from health—are dealt with under separate headings, and the diet found most suitable for each is discussed. The article on obesity will be picked out by most readers we imagine directly the book is taken up, in order to see if the author has any new ideas on this subject. In this particular instance the matter is not overdone, and the author presents a fair *résumé* of the different methods of treating fatness by the alteration of the diet. It must be admitted that after comparing the various views and different diets recommended by authorities, one is inclined to the opinion that the basis of them all is starvation—pure and simple, and that the diverse methods only differ in detail—we might perhaps also add in degrees of practicability and pleasantness.

A book like the one before us is all the more interesting just at the present time, because there seems to be a revulsion of feeling in the minds of many medical men as to whether—with certain important exceptions—the diet is of so much value in the treatment of disease as has been supposed. Conditions such as diabetes, gastric ulcer, enteric fever, gout, and rheumatism, certainly depend for their treatment upon careful dieting, and although the list might easily be augmented, there is no doubt that in a considerable number of diseases a few broad principles of dietetic treatment are all that are required. Most adults know pretty well what diet is best for them in spite of the asseverations of their relatives and friends that they *will* take what doesn't suit them. Every physician of experience must have noted, after carefully writing out a dietary for a patient, the not unusual rejoinder, "Why this is pretty much what I have been in the habit of taking for years."

Practitioners, however, who are in the want of hints for the construction of dietaries will find their requirements satisfied by the volume before us.

NERVOUS AND MENTAL DISEASES.*

In the first edition of their work Drs. Church and Peterson stated that they made no claim for it to be other than a carefully prepared text-book. The care, however, which they bestowed on it soon obtained for their work on Nervous and Mental Diseases a well merited place in this special department of medicine. The third edition has been carefully revised throughout, and the already valuable series of illustrations and diagrams has been increased. The result is one of the most concise text-book of neurology that we have had the privilege of reading. The book is free from that tendency to diffuseness, which has crept into recent treatises on nervous diseases. Throughout the book there are pages of tabular diagnoses and other facts.

The chapter on Cerebral Hæmorrhage and the Hemiplegic State (chapter vi.) is one of considerable interest. The subject is treated in somewhat different manner than is usually done, and is a good specimen of the able method of clinical description characteristic of the book. Cerebral Softening (chapter vii.) is very instructive. As might be expected, cerebellar ataxy, which has received much attention at the hands of American neurologists comes in for a fair share of consideration. We may safely say, however, that the able chapters on Neuroses form the leading feature of the work; thus, Hysteria, Epilepsy, and different forms of Spasm and other motor neuroses are described fully and clearly. We notice that the writers include Huntington's

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* Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D. Third edition. London and Philadelphia: W. B. Saunders and Co.

Disease under the head of motor neuroses, although they admit that this latter term is rather one of convenience than of strict scientific accuracy. Recent investigations on the morbid anatomy of Huntington's Disease support its claim to a distinct lesion of central mental system. The portion of the book dealing with nervous diseases is from the pen of Dr. Peterson. It is perhaps less extensive in proportion to the rest of the book, but as the object of the writer is to give a clinical description of mental diseases, rather than a psychological treatise on morbid mental states, he is well advised in keeping this portion of the book within limits. In some cases there is a tendency to curtail description of morbid anatomy, but on the whole we can safely say the work is one of high merit, and we can strongly recommend it to the advanced student and specialist alike.

ATLAS AND PRINCIPLES OF BACTERIOLOGY.*

From time to time we have had the pleasure of reviewing volumes of Messrs. W. B. Saunders' Series of Medical Hand Atlases. We have always acknowledged the great excellence and scientific value of those already published, and as each new work has appeared, we have but repeated our expression of opinion, and we do so now in favour of the Atlas of Bacteriology. This work is in two volumes, uniform with others of the series. Vol. I contains the plates; Vol. II, the letterpress. The former are among the most perfect of their kind that we have seen. In fact, the appearance of cultures in tubes and on plates is so faithfully reproduced, that it leaves nothing to be desired. Plate 34 gives nine different illustrations of the B. anthracis, which are so life-like, that the most inexpert student should be able to recognise the real culture at first sight, had he seen the illustration. The method followed is to give a series illustrating the growth of each organism in stab and streak cultures, and on gelatine plates, at different stages and under different magnifications. These are followed by preparations representing the microscopic appearances stained and unstained. Vol. II is devoted solely to description of Bacteria and allied organisms, and is well written. The characteristics of each organism are given according to a fixed method, as they are perceived in stab or surface culture, or in liquid or other media.

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* Atlas and Principles of Bacteriology. By Prof. K. B. Lehmann and R. O. Neumann. Edited by Geo. H. Weaver, M.D. London and Philadelphia : W. B. Saunders and Co.

An appendix follows, which gives many useful details as to staining and preparing.

We most confidently recommend this work as, without doubt, the best atlas of bacteriology that has as yet appeared; and we feel we must repeat the remark made in reference to other works of the series—"The very moderate price brings the book within reach of all."

THE HEALING OF NERVES.*

HITHERTO there have been two opposing theories put forward as to the method, by which the distal portion of a peripheral nerve-trunk is regenerated after section of the nerve. The one theory, and the one that has been accepted by the majority of writers, is that the new axis-cylinders in the regenerated distal segment are direct outgrowths from those in the proximal segment, the young axis-cylinders growing downwards and replacing the degenerated old ones. This may be called the "central" theory. The other theory, which may be called the "peripheral," is that the new fibres in the distal segment are formed from pre-existing cells in the distal segment itself. Messrs. Ballance and Stewart have exhaustively investigated the subject and have drawn their conclusions from 140 observations, the majority being based upon experiments on living animals. The conclusions arrived at may be shortly summed up as follows:—

1. "Even in the distal segment of a non-united nerve, regeneration of axis-cylinders and of medullary sheaths takes

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* The Healing of Nerves. By Charles A. Ballance, F.R.C.S. and Purves Stewart, M.D. London: Macmillan and Company. 1901.

place, although full maturity of the new nerve-fibres is not attained, unless the distal segment is joined to the proximal."

2. The new axis-cylinders are undoubtedly formed by proliferation of the neurilemma cells of the distal segment. These form "spider-cells," which join end-to-end and so form a continuous axis-cylinder.

3. The medullary sheath is "laid down by a process of secretion along one side of a spindle-shaped neurilemma cell."

4. A nerve-graft plays a passive part only, being ultimately infiltrated by neurilemma cells from both segments, and by these cells the new nerve-fibres are formed.

It will thus be seen that the result of the author's work is that the "peripheral" theory must be held to be correct, and that the neurilemma cell is the all-important factor in the process of nerve-regeneration. Messrs. Ballance's and Stewart's investigations have evidently been most carefully carried out, and the results obtained are most important. The authors have again proved, if indeed proof were needed, the enormous value of carefully performed experiments on living animals.

OUTLINES OF PRACTICAL PHYSIOLOGY.*

THE fourth edition of Prof. Stirling's admirable Manual of Practical Physiology has been brought thoroughly up to date, and has undergone not a little alteration in the process. In a science like physiology, which is in an acutely progressive stage, a few years produce an extensive crop of new facts, and largely modify the conclusions drawn from those previously known. Prof. Stirling's book deals less with conclusions than with the details of practical experiment, and hence less re-writing has been needed than would be the case in a theoretical manual. Nevertheless, there is ample evidence that the whole book has undergone careful revision. The process of extension is most marked in the sections dealing with the examination of the senses, and this part of the book has been very considerably developed. Its subject is one of immense importance in practical medicine, and these chapters are well worth careful study by others than students in the physiological laboratory. We need scarcely say that the book has obtained an assured place in the estimation of teachers of practical physiology, and the appearance of an up-to-date edition will be cordially welcomed by them.

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* Outlines of Practical Physiology. By William Stirling, M.D., Sc.D., Brackenbury Professor of Physiology in the Owens College, and Professor in Victoria University. Fourth Edition, revised and enlarged. London: Charles Griffin and Company, Limited. 1902.

DISEASES OF THE DIGESTIVE ORGANS IN INFANCY AND CHILDHOOD.*

THE great importance of digestive disorders in children—the fact that they form by far the major part of all the illnesses of infancy, is sufficient to warrant the publishing of any important contribution to the management of the alimentary system and its diseases. This book, however, coming from the pen of Dr. Louis Starr, one of the leading authorities on pediatrics, is without doubt one that has been of great value to the physician. We therefore welcome the appearance of a third edition, which contains much additional matter, notably on the subjects of Infantile Scurvy, Rickets, Infectious Follicular Tonsillitis, Adenoids, Appendicitis, and particularly a chapter on Lithæmia as occurring in children. We feel certain that the work will be of interest and value to all concerned in the treatment of children's diseases, as it is eminently practical, especially as regards treatment. Many important recipes for preparing foods are included in the work.

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* Diseases of the Digestive Organs in Infancy and Childhood. By Louis Starr, M.D. Third edition. London: Rebman Limited.

FORENSIC MEDICINE AND TOXICOLOGY.*

The new edition of Prof. Dixon Mann's well-known Manual has needed but little alteration. The various sections stand very nearly as in the second edition published in 1898. Wherever necessary, the work has been brought fully up to date, but practically the addition of a few poisons, and the re-writing of the section on Arsenical Poisoning in accordance with the experience gained in the recent epidemic constitute the extent of the changes. The book still stands without a rival as a student's textbook of forensic medicine and toxicology, and a practitioner's work of reference.

Correspondence.

The Editor, *The Birmingham Medical Review.*

"THE WAR AGAINST CONSUMPTION."

Dear Sir,

I have to thank you for your notice of my little book with the above title in the May number of your valuable Review. As I thoroughly agree with your reviewer's deprecation of the multiplication of books on medical subjects for popular consumption, perhaps you will allow me to offer some justification for the publication of the volume in question. While I agree that the circulation of pseudo-medical treatises in popular language may often be attended by undesirable results, it does not, I think, follow that there may not be cases in which the promulgation of medical knowledge among the general public may be of good. In the case of pulmonary tuberculosis, it seems to me that there is especial need for the circulation of accurate information, inasmuch as not only the welfare of the afflicted person, but also the safety of the public may depend upon the patient and his friends possessing a knowledge of the nature of the disease, and the ways in which the spread of the contagion may be prevented. There is also the fact that a more extended appreciation of the value of sanitation and hygienic conditions of life in checking the inroads of consumption would undoubtedly largely reduce the number of victims of the disease. On these facts alone, I think there would not be much difficulty in justifying the appearance of a book on the subject, written, like my own, avowedly for the instruction of the public. Indeed, your reviewer himself admits that one of the most striking features of the Congress on Tuberculosis was the unanimity with which the education of the public on the matter was advocated.

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* Forensic Medicine and Toxicology. By J. Dixon Mann, M.D., F.R.C.P., Professor of Forensic Medicine and Toxicology in Owens College, Manchester. Third Edition, revised and enlarged. London: Charles Griffin and Company, Limited. 1902.

There is, however, another consideration, which your reviewer seems to have overlooked. The Congress, of which my little volume is a *résumé*, was by no means an exclusively medical assembly. It was very largely attended by the laity, including members of municipal authorities, architects, farmers, meat and milk vendors, etc., many of whom read interesting and valuable papers. Nor were the topics discussed by any means solely of a medical nature. For these reasons, it seems to me that a volume summarising in popular language the proceedings of a catholic gathering of this kind can hardly be classed with the type of works of which your reviewer not unwarrantably expresses his disapproval.

With apologies for troubling you with this somewhat lengthy letter,

I am,
Yours faithfully,
DENNIS VINRACE.

24, Alexander Square,
Brompton, S.W.,
May 7th, 1902.

We have received further correspondence from Dr. Vinrace, enclosing a letter from Dr. Frederick Roberts disclaiming any intention of disparaging books like the one referred to above. We are glad to hear it, but do not feel that the letter requires publication. Our reviewer expressed a perfectly legitimate opinion and stated it with moderation. We do not think that Dr. Vinrace has anything to complain of. Ed.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

We have received the following from Messrs. Burroughs and Wellcome:—Tabloid Liquorice Compound Powder, each tabloid containing 30 grains of the powder. This tabloid has the advantage of concealing the unpleasant taste of the preparation. Tabloid Kino Compound Powder, containing 5 grains of the official powder.

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New Books, etc., Received.

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The Diagnosis of Nervous and Mental Diseases. By HOWELL T. PERSHING, M.SC., M.D.

A System of Physiologic Therapeutics. Edited by SOLOMON SOLIS COHEN, A.M., M.D.

Dietotherapy and Food in Health. By NATHAN S. DAVIS, JR., A.M., M.D. Volume VI.

A Manual of Ophthalmoscopy. By J. E. JENNINGS, M.D.

The Theory and Practice of Medicine. By HENRY WALTER SYERS, M.A., M.D. Vol. II.

Diseases of the Intestines. By JOHN C. HEMMETER, M.D., Philos. D. Volume II.

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Derby Borough Asylum. Thirteenth Annual Report. 1901.

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CONTENTS.

PAGE

Abortion, Treatment of 104
Acetone, Source of 163
Adenoid Tissues, Hypertrophy of 1, 65
Ætiology in relation to Disease.. 152
Age as a Factor in Ætiology of Lead Poisoning 234
Alcoholism in relation to Glycosuria 129
Alvarenga Prize of the College of Physicians of Philadelphia 319
Anæsthetics 43
Analgesia, Spinal 279
Anatomy 311
Ataxia, Tabetic, Treatment of .. 307
Auto-Intoxications of Pregnancy 193

Bruce, J. Mitchell, M.A., LL.D,, M.D., F.R.C.P. 321
Balneology 58, 59
Bath. The Electric Series 136
Bile Salts, Hay's Reaction for.... 167
Bleeders, A Family of 354

Codd, J.A., M.D., B.Sc., 136.
Children, Spinal Analgesia in .. 287
Chloratone in Epilepsy 178
Chloroform and Ether 43
Christian Science 318
Chronic Disease, Acute Manifestations of 321
Cirrhosis, Diabetes complicated by 164
Climatology 58, 59
Cocainisation, Spinal 282, 286, 288, 293
Congress of Internal Medicine .. 155
Constipation in Infancy 257

Death in Epilepsy 171
Delirium, Epileptic, Treatment of 178
Delirium following Spinal Cocainisation 294
Dermatology 54
Dextrose in Urine, Detection of.. 165
Diabetes 129, 160
Diagnosis Physical 125
Digestive Glands, Work of 370
Dilatation of Stomach 307
Dormial in Epilepsy 178
Duodenum, Dilatation of 269

Edge, Frederick, M.D., F.R.C.S. 104
Ear, Diseases of 122
Eczema, Common Forms of 200
Electric Series Bath 136
Embryology 120
Epilepsy 143, 168
Ethics, Medical 250
Eucaine 296
Eucalyptus in the Treatment of Diabetes 162
Exercise in Tabetic Ataxia 307

Forshaw, Chas. F., D.D.S., 114
Feeding, Forcible 28
Femoral Artery, Punctured Wound of 305
First Aid 377
Foreign Body in Left Bronchus .. 306
Fowke (Mr. Francis) Retirement of 306
Friedrichshall Mineral Water .. 63

Gibb, G. A., M.B., C.M., 32.
Glycosuria 129, 160

Hewetson, John T., M.D., F.R.C.S., 84, 213; Hickinbotham. J. R. M.B., 152; Heath. A. Douglas, M.D., M.R.C.P., 200.
Hay's Reaction for Bile Salts .. 167
Hematology 56
Histology, Pathological 253
Hydatid Disease of Lungs 185
Hydroamnion, Acute 32
Hygiene 313
Hypertrophy of Lymphoid Tissues 1, 65
Hysterical Mutism 20

Ingleby Lectures 1, 65
Insanity 124, 375
Internal Medicine, Congress of .. 155
Intestines, Diseases of 315
Ireland, Royal Academy of Medicine in 187

Jordan, Walter, M.D., 257.
Jacksonian Epilepsy, Localising Value of 175

Lawrie, W. Duncan, M.D., F.R.C.S.E., 20.
Lead Poisoning, Age as a Factor in Ætiology of 234
Leucomaines, Diabetogenic 164
Leucocyte Chart in Pneumonia.. 84
Leucocyte Estimations 213
Ligaments 375
Lungs, Hydatid Disease of 185
Lymphoid Tissues, Hypertrophy of 1, 65

Marsh, F., F.R.C.S., 1, 65; Martin. Christopher, M.B., F.R.C.S., 337.
Malignant Disease, Leucocyte Estimations in 213
Maxilla, Tumour of 114

MEDICAL ABSTRACTS—
  The Treatment of Phthisis. By Douglas Stanley, M.D., M.R.C.P. 37
  Anæsthetics. By W. J. McCardie, B.A., M.B., B.C. 43
  Report on Urinary and Renal Disease. By Robert Saundby, M.D., M.Sc., LL.D.. F.R.C.P., 160.
  Epilepsy. By James W. Russell, M.A., M.D., M.R.C.P. 168
  Some recent Articles on Spinal Analgesia. By W. J. McCardie, B.A., M.B., B.C. 279
  Pathology. By James Miller, M.B., M.R.C.P. 297,358

PAGE
Medicine 53, 57, 59, 126, 155, 182, 252, 317, 373
Mental Diseases 124, 375
Morphology 120
Mutism, Hysterical 20

Narcosis, Medullary 296
Naso-Pharynx, Diseases of 122
Nervous Diseases 124
Neuritis, Multiple 269
New Inventions, Drugs, etc. 63, 127, 255, 378
Nitroglycerine in Epilepsy 178

OBITUARY—
- George Fowler Bodington, M.D., Durh., M.D. Giessen, M.R.C.P., Lond., F.R.C.S., Eng. 61

Ophthalmoscopy 123

ORIGINAL COMMUNICATIONS—
- The Ingleby Lectures. Chronic Hypertrophy of the Faucial and Pharyngeal Lymphoid or Adenoid Tissues. By F. Marsh, F.R.C.S. 1, 65
- A Note on Hysterical Mutism. By W. Duncan Lawrie, M.D. F.R.C.S.E. 20
- Some Clinical Remarks on Forcible Feeding. By James E. H. Sawyer, M.A., M.B., B.Ch. 28
- The Leucocyte Chart in Pneumonia. By John T. Hewetson, M.D., F.R.C.S. 84
- The Treatment of Abortion. By Frederick Edge, M.D., F.R.C.S. 104
- A Further Note on Alcoholism in relation to Glycosuria and Diabetes. By Robert Saundby, M.D., M.Sc., LL.D., F.R.C.P. 129
- The Electric Series Bath. By J. A. Codd, M.D., B.Sc. 136
- The Sero-Therapeutic Treatment of Epilepsy: a Criticism. By Jas. W. Russell, M.A., M.D., M.R.C.P. 143
- Note on Ætiology in its Relation to Disease. By J. R. Hickinbotham, M.B. 152
- The Auto-Intoxications of Pregnancy. By W. A. Potts, B.A., M.D. 193
- Some Common Forms of Eczema. By A. Douglas Heath, M.D., M.R.C.P. 200
- Leucocyte Estimations in Malignant Disease, Tuberculosis and Typhoid Fever. By John T. Hewetson, M.D., F.R.C.S. 213
- A Note on Age as a Factor in the Ætiology of Lead Poisoning. By Jas. W. Russell, M.A., M.D., M.R.C.P. 234
- Habitual Constipation in Infancy. By Walter Jordan, M.D. 257
- A Note on Dilatation of the Duodenum, with the Report of a Case associated with Multiple Neuritis. By James W. Russell, M.A., M.D., M.R.C.P. 269
- An Address on Acute Manifestations of Chronic Disease. By J. Mitchell Bruce, M.A., LL.D., M.D., F.R.C.P. 321
- On the Prevention and Treatment of Puerperal Sepsis. By Christopher Martin, M.B., F.R.C.S. 337
- A Family of Bleeders. By Ernest A Sadler, M.D. 354

Orthopædic Surgery 242
Osteo-arthropathy, Pulmonary .. 304

Potts, W. A., B.A., M.D., 193.
Paralysis, Infantile 242
Pathology 297, 358
Pharmacology 116
Phlorizin Glycosuria 161
Phonographers, The Society of Medical 126
Phthisis, Treatment of 37, 376
Physics 125
Pneumonia, Leucocyte Chart in 84
Poliomyelitis 245
Pregnancy, Auto-Intoxications of 193
Protoplasm 255
Pseudo-epilepsy 173
Purpura, Epileptic 173
Pus from Kidney and Bladder, Diagnosis of 166

Russell, James W., M.A., M.D., M.R.C.P., 143, 234, 269.
Rachicocainisation 281, 282, 289
Renal Diseases 160

REPORTS OF CASES—
- A Case of Acute Hydroamnion associated with Uniovial Twins. By G. A. Gibb, M.B., C.M. 32
- Case of Tumour of the Superior Maxilla. By Chas. F. Forshaw, D.D.S. 114

REPORTS OF SOCIETIES—
- British Medical Association. Birmingham and Midland Counties Branch 304, 365
- Midland Medical Society 369

Respiration, Diseases of the Organs of 188

REVIEWS OF BOOKS—
- Allchin, Manual of Medicine Vol. iv. 373
- Bland Sutton, Ligaments: their Nature and Morphology. Third Edition 375
- Bradshaw's Dictionary of Mineral Waters, Climatic Health Resorts, Sea Baths, and Hydropathic Establishments 59
- Brower and Bannister, A Practical Manual of Insanity, for the Medical Student and General Practitioner 375
- Cheyne and Burghard, A Manual of Surgical Treatment. Part vi., Section I. 247
- Cornil et Ranvier, Manuel d'Histologie Pathologigue. Vol. ii. 253

PAGE
Cunningham Text-book of Anatomy 311
Da Costa, Clinical Hematology 56
Fagge and Pye-Smith, A Text-book of Medicine. Fourth Edition. Vol. ii. 317
Frenkel, The Treatment of Tabetic Ataxia by means of Systematic Exercise 307
Gibson and Russell, Physical Diagnosis. Third Edition .. 125
Gould and Pyle, A Pocket Cyclopedia of Medicine and Surgery 126
Gould and Warren, International Text-book of Surgery. Vol. i. 186
Hayward, Protoplasm: its Origin, Varieties, and Functions 255
Hemmeter, Diseases of the Intestines. Vol. ii. 315
Hutchison and Rainy, Clinical Methods. New Edition 59
Jennings, A Manual of Ophthalmoscopy 123
Jones (Macnaughton), The Practitioner's Handbook of Diseases of the Ear and Naso-Pharynx 122
Keith, Human Embryology and Morphology 120
Kelynack, The Selection of Consumptive Cases for Sanatorium Treatment 376
Knopf, Tuberculosis as a Disease of the Masses, and how to combat it 249
Lehfeldt, A Text-book of Physics 125
Lendon, Clinical Lectures on Hydatid Disease of the Lungs 185
Moll, Christian Science, Medicine and Occultism 318
Nothnagel's Encyclopædia of Practical Medicine, Vol. iii. .. 182
Parkes and Kenwood, Hygiene and Public Health. Second Edition 313
Pawlow, The Work of the Digestive Glands 370
Pershing, The Diagnosis of Nervous and Mental Diseases .. 124
Reinhardt and Thomson, A Handbook of the Open-Air Treatment and Life in an Open-Air Sanatorium 376
Robertson, Practical First Aid 377
Rose and Carless, A Manual of Surgery. Fifth Edition 316
Saundby, Medical Ethics: a Guide to Professional Conduct 250
Saunders' Year-book of Medicine and Surgery 60
Sawyer, Contributions to Practical Medicine. Third Edition 252
Strumpell, Text-book of Medicine for Students and Practitioners. Third Edition 57
Syers, The Theory and Practice of Medicine, Vol. ii. 53

PAGE
Walker, An Introduction to Dermatology. Second Edition 54
West, Diseases of the Organs of Respiration 188
White (Hale). Text-book of Pharmacology and Therapeutics 116
Zuckerhandl, Operative Surgery 118
Climates and Baths of Great Britain. Vol. ii. 58
Edinburgh Medical Journal. Vol. xi. 319
Medical Annual, The 318
Royal Academy of Medicine in Ireland, Transactions of. Vol. xix. 187

Sawyer, James E. H., M.A., M.B.; B.Ch., 28; Saundby, Robert, M.D., M.Sc., LL.D., F.R.C.P., 129; Sadler, Ernest A., M.D., 354
Sanatorium Treatment of Phthisis 376
Sepsis, Puerperal, Prevention and Treatment of 337
Sero-Therapeutic Treatment of Epilepsy 143, 178
Spinal Analgesia 279
Status Epilepticus 171
Stomach, Diagnosis and Treatment of Ulcer of 155
Stomach, Motor Insufficiency and Dilatation of 307
Suppression of Urine, Total 166
Surgery 126, 186, 247, 316
Surgery Operative 118

SURGICAL ABSTRACTS—

Orthopædic Surgery. By W. Duncan Laurie, M.D., F.R.C.S.E. 242

Tabloids, New 63, 127
Tendon Grafting 242
Therapeutics 116
Tropacocaine in Spinal Analgesia 289
Tuberculosis as a Disease of the Masses 249
Tuberculosis, Leucocyte Estimations in 213
Tumour of Maxilla 114
Twins, Uniovial 32
Typhoid Fever, Leucocyte Estimations in 213

Ulcer of Stomach, Diagnosis and Treatment of 155
University of Birmingham 190
Urinary Diseases 160

Vermiform Appendix, Gangrenous 306
Voyages d'Etudes Medicales 127

Waters, Mineral 59, 63
Wound of Femoral Artery 305

THE

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ORIGINAL COMMUNICATIONS.

THE INGLEBY LECTURES.

CHRONIC HYPERTROPHY OF THE FAUCIAL AND PHARYNGEAL LYMPHOID OR ADENOID TISSUES.*

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LECTURE I.

Mr. Dean and Gentlemen,

It is customary and very right that at the commencement of these lectures some reference should be made to keep alive the memory of him who founded and endowed them, the late Dr. Ingleby. He was born at Cheadle in Staffordshire in 1794. He was apprenticed to a medical man there for five years. He then went to the London and Edinburgh medical schools and came to Birmingham in May, 1816, being appointed surgeon to the General Dispensary in August of that year. In 1828 he became lecturer on midwifery in the School of Medicine and not a little of the reputation of Queen's College was due to him. He acquired a very extensive and important practice and as an obstetric practitioner he stood alone in the provinces. His opinion was sought by patients from London and all parts of the kingdom. As an author in midwifery he was without a rival and he gained a European reputation by his work on obstetric medicine. He also wrote a book on Uterine Hæmorrhage and published a course of clinical lectures in *The Lancet.* As a lecturer he had no pretensions to eloquence or to fluency; he never talked learnedly but used good Saxon words with taste and precision, his *forte* being description and detail. He was a man of no display and in consultation was unassuming almost to a fault, careful to a degree not to place a practitioner in any difficulty. He was never heard to speak with discourtesy or disparagement of any fellow practitioner. In private life he was singularly amiable and gentle and was never known to be angry, although he was remarkably nervous and excitable A case of unusual severity would spoil both his slumbers and his appetite. He suffered nothing to interfere with his practice, and he pursued it with the enthusiasm and fate of a martyr. He laboured not wisely but too well, and slowly but certainly his health gave way under the pressure of habitual fatigue. Nothing, however, would induce him to take even a temporary rest, and not until the mischief was beyond a remedy did he see how fatally he had trifled with his life. For six weeks prior to his death he suffered from occasional attacks of atonic gout, clearly the consequence of his extreme abstemiousness and over-toil. He was again advised to rest, to take more nourishment, and to undergo a course of treatment. This advice, though consistent with his own opinion, was utterly disregarded In this condition a feverish cold further depressed his vitality and an attack of pleuritis followed on the 24th of January, for which he was bled, leeched, blistered, and purged. The inflammation ran on to effusion, when its severity subsided, leaving its subject in an exhausted, dying state. A slight rally was followed by an attack of meningitis and by death on the 28th of January, 1845. Thus perished prematurely, at the age of 50 years, one of the brightest ornaments of our profession and one of the most amiable, useful, and esteemed members of society—a victim to an undue devotion to study and to the duties of his immense practice. This brief outline of his life and death conveys to us both an example and a warning—so plain that he who runs may read. Could he but speak to us from the land of the beyond the warning would be his theme. I pray you to give heed to the example.

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* Delivered at the University, Birmingham, May 27th, 1902.

In accordance with the wishes of the founder I purpose to speak of conditions peculiar, at all events to a great extent, to childhood—viz , Hypertrophy of the Faucial and Pharyngeal Lymphoid or Adenoid Tissues. I have selected this subject as being one of great interest to those engaged in the general work of our profession, and as one upon which I am able to speak with some authority. Although I have not much that is new to bring before you at the present time I feel there is much that needs saying upon the subject.

The structure of these lymphoid tissues consists of a network of loose connective tissue in the meshwork of which are lymphatic follicles and also, according to Sajous, some conglomerate glands. They are covered with cylindrical epithelium, and are richly supplied with blood-vessels. They occur as distinct and well-defined rounded masses between the anterior and posterior pillars of the pharynx—the faucial tonsils—as an irregular layer across the upper part of the posterior wall and vault of the naso-pharynx—Luschka's tonsil—and as scattered patches over the posterior and lateral walls of the pharynx, sometimes in the latter situation extending downwards as distinct bands from Luschka's tonsil, behind the posterior pillars of the pharynx. There are also two patches at the base of the tongue in the glosso-epiglottidean fossæ known as the lingual tonsils, but which are outside the scope of these lectures. These tissues during inflammatory catarrhal attacks increase in size and are also very prone under certain conditions to overgrowth or hypertrophy—and it is this latter condition alone as distinct from the former that I purpose to speak about.

The faucial tonsils when hypertrophied are generally spoken of as "enlarged tonsils." Hypertrophy of Luschka's tonsil has gone by many names: "adenoid vegetations in the naso-pharynx," "adenoid growths." "post-nasal growths" (or "growths" for short), "post-nasal adenoids," and now "adenoids." This last is a short and convenient name, and so long as the true nature of the condition is kept in mind there can be no valid objection to its general use. "Enlarged tonsils and adenoids" is now a common way of denoting this hypertrophy of the two groups of tonsils. Hypertrophy of the scattered patches and lateral bands in the pharynx is usually termed "chronic follicular or granular pharyngitis." It may be said that there is practical agreement that enlarged "tonsils and adenoids" are usually associated, that they occur essentially in childhood and adolescence, and that they are almost equally prevalent in the two sexes. Considerable diversity of opinion, however, exists as to the influence or importance of most of the assigned causes—viz., heredity, scrofula, lymphatic temperament, climate, anterior nasal stenosis, cleft palate, vaginal secretions at birth, the acute exanthemata, whooping-cough, and nasal and naso-pharyngeal catarrh. Heredity (including both the transmission of a special tendency to this hypertrophy, of which some well-marked instances have come under my notice, and the liability of children with a tuberculous family history to lymphatic affections) is certainly a cause, and that it may be the only one is shown by the occasional manifestation of the symptoms from the time of birth. Climate is undoubtedly a most important factor. The atmosphere in large cities and for miles around is laden, more or less, with irritating ingredients—particles of carbon, acrid fumes, etc.—and the constant passage of these impurities over these tissues so sensitive to stimulation is sufficient in itself to produce over-growth. Add to this a winter climate—though the word "winter" might almost be omitted—of rapid alternations of temperature, periods of cold winds, wet, fog, and gloom, with only occasional intervals of dryness and sunshine, and you have ideal conditions for the production of acute catarrhal inflammations—rhinitis, adenoiditis, and tonsillitis. Let only these attacks be repeated, or, above all, neglected, as is so often the case with the masses, and you soon have a chronic tonsillitis and adenoiditis with the inevitable hypertrophy as a sequel. A cold, moist climate, clay subsoil, etc., is a sufficiently exciting cause altogether apart from the effect of the vitiated air of large towns. Measles, scarlet fever, whooping-cough, and influenza are active exciting causes, the first symptoms often dating from one of these illnesses. Anterior nasal stenosis is considered by some authorities to be a predisposing and even an exciting cause of adenoids, but a careful examination of a very large number of children with adenoids, sufficient to cause almost complete nasal stenosis, has shown the nasal fossæ to be generally patent, and only stenosed anteriorly in cases where catarrh has been present as well. In fact, my observations have led me to the conclusion that anterior stenosis from turbinate congestion, etc., is either concurrent with an adenoiditis or a result rather than a cause of the hypertrophy. Deflections of the septum sufficient to cause anything like complete stenosis are very rare in children. To sum up, heredity, bad climate, bad hygiene, bad feeding, and neglected colds will account for the majority of cases.

The age at which the hypertrophy takes place, or rather causes symptoms requiring treatment, is shown by the following table of 1,000 cases operated upon by me at the Birmingham Ear and Throat Hospital from Jan. 1st, 1899, to Jan. 15th, 1902—a little over three years. Of the 1,000 cases 556 of the patients were females, and 444 were males, and 816 were under and 184 were over 16 years of age. The youngest patient was 14 weeks old and the oldest was 36 years old.

Table of 1,000 Cases of Hypertrophy operated upon at the Birmingham Ear and Throat Hospital between Jan. 1st, 1899, and Jan. 15th, 1902.

Age.	Number.
In the first year	9
,, second year	17
,, third year	48
,, fourth year	74
,, fifth year	105
,, sixth year	76
,, seventh year	71

Age.	Number.
In the eighth year	55
,, ninth year	51
,, tenth year	53
,, eleventh year	37
,, twelfth year	57
,, thirteenth year	49
,, fourteenth year	41
,, fifteenth year	34
,, sixteenth year	39
	816
Over sixteen years of age	184
	1,000

An analysis of the 816 cases among patients under 16 years of age shows that the greatest number were in their fifth year, those in their sixth, fourth, and seventh years ranking next. Considerably over one-third, therefore, of the 816 cases occurred in these four years.

Although in children enlarged tonsils are nearly always associated with adenoids it will be most convenient to consider the special characteristics, symptoms, and treatment of each separately.

The clinical importance of enlarged tonsils has been recognised for a great number of years, but symptoms were assigned to them which were in reality due to adenoids—then unknown. Consequently, tonsillotomy often failed to give more than partial relief, and became to some extent discredited. Disappointed parents attributed to the operation the poor development of the thorax, the sexual organs, and mammæ in girls, and the tradition still lingers. An occasional protest against removal of the the tonsils is still made on these grounds.

In size, shape and consistence enlarged tonsils vary much, but they may be arranged in three groups: (1) where the hypertrophy is chiefly in the horizontal diameter—the projecting tonsil; (2) where the hypertrophy is chiefly in the vertical diameter—the elongated tonsil; and (3) where the hypertrophy is chiefly in the antero-posterior diameter—the broad sessile or flat tonsil. These types may, and often do, approach each other and are found in combination with one another, the most frequent being the elongated with the projecting. This occasionally has in exaggerated forms the appearance of a double tonsil. This is probably due to the persistence of the lower of the two furrows which, according to Killian,* are present at birth. Persistence of the upper furrow is more common and without careful examination its circular edge might be mistaken for the edge of an excavated ulcer.† The surface of the tonsils may be even and of a fairly normal aspect or ragged with large and irregular openings into the crypts. Very rarely it is papillated, as in these two tonsils removed from a girl, aged five years, where the surface is covered with projecting papilla, some half an inch long, and presents an appearance that might be mistaken for multiple papillomata. The consistence may be normal, dense and fibrous, or soft and mushy, according to the predominance of the fibrous or lymphoid tissues. The older the patient the more fibrous the tissues, as a rule, but much depends on the occurrence and length of chronic inflammatory attacks. The secretion from the follicles may be caseating and retained in the crypts and recesses of the tonsils. The pillars of the fauces may from previous inflammatory attacks be more or less adherent and in marked cases almost blended with the tonsils, especially in the sessile variety.

The symptoms caused by enlarged tonsils may be classified as (1) obstructive, (2) catarrhal, and (3) reflex.

1. *Obstructive symptoms.*—The size alone of the tonsils may cause considerable mechanical trouble. Swallowing when the projecting tonsils are in apposition is rendered difficult—a special effort has to be made by the child to get the food out of his mouth and in extreme cases fluid only can be swallowed and that with difficulty. Under similar conditions buccal

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* *Arch. für Laryngologie*, vol. vii.

† Dundas Grant: *Brit. Med. Jour.*, vol. ii., 1901.

respiration is much impeded (a serious matter if nasal stenosis from adenoids coexists) and the voice is thick and indistinct. In some cases the palate is pressed upwards to such an extent that the action of the palato-tubal muscles is impeded and deafness results from imperfect middle-ear aëration.

2. *Catarrhal Symptoms.*—The crypts and recesses, especially in those forms where lymphoid tissue predominates, are suitable places for the lodgment of the catarrh microbe—the pneumococcus and other micrococci akin to it—and form "centres" for catarrhal attacks. The microbe, probably ever present, waits only for some diminution of tissue resistance, such as an exposure to cold will produce, to exert its maleficence. The catarrh may either keep localised, causing tonsillitis and exaggerating or producing obstruction, or in those of less resisting power may extend to adenoids, if present, causing adenoiditis, and from there to the middle-ear or to the nasal cavities or downwards to the organs of respiration and digestion, according to the constitutional peculiarity or tendency of the individual. Owing to absorption of toxin generated by the catarrh microbe or the passage of the microbe itself through the lymphatics, the lymphatic glands corresponding to the tonsils (the upper set of the deep cervical group) often become inflamed and enlarged. In the slighter cases the glands enlarge during catarrhal attacks and subside with the disappearance of the catarrh. In others the glands do not disappear on the subsidence of the catarrh but remain distinctly enlarged and become larger and tender on pressure during every subsequent catarrhal attack but with little or no tendency to break down or to suppurate. In the more severe cases there is from the first a decided tendency for glands to break down and to suppurate. This variation is due to the difference in the resisting power of the individual and the intensity and amount of the toxin absorbed. Tonsillotomy prevents these attacks and if promptly done at the outset may arrest the progress towards suppuration. Glands, too, that have been enlarged for a considerable length of time

often gradually diminish in size and disappear after tonsillotomy. The two following cases illustrate this and the possible arrest of suppuration.

Case 1.—The patient, a boy, æt. 14, with a good family history, was seen on Nov. 5th, 1900, for enlargement of the right upper cervical glands of some years' duration, one of them being of the size of a small hen's egg, painless, but becoming larger during colds and tender to pressure. Treatment had been of no avail and tonsillotomy had been done at Cape Town. The right tonsil was, however, very large, with a ragged surface; the adenoids were in a similar condition, and patches of hypertrophied lymphoid tissue were scattered over the pharynx. Right tonsillotomy and removal of adenoids was advised and performed, and after recovery from the operation the pharyngeal patches were cauterised. This was followed by gradual diminution of the glands, and the patient's mother reported on Feb. 17th, 1902, that they had completely disappeared.

This is an extreme case and it was a question at the time of operation if the glands should not then be excised, but the mother wished to await the result of the simpler procedure and was much gratified at the result.

Case 2.—A healthy child, æt. 6, living in the country, was seen on Nov. 22nd, 1900, for enlargement of the left upper cervical and parotid sets of glands—a sequel of a cold contracted a fortnight previously. Twelve months ago a similar condition happened on the right side and was followed by suppuration of the glands necessitating incisions. On the right the scars were well marked and one was adherent to a hard nodular gland. On the left side a mass of glands, tender when touched, formed a prominent swelling below the left ear and the angle of the jaw. Both the tonsils and adenoids were large and soft but were not inflamed. As no fluctuation could be detected a hope was held out that suppuration might be prevented by immediate tonsillotomy and curetting of the adenoids. This was done and in a few days there was a marked diminution in the swelling and in a fortnight it had practically disappeared, though a few of the glands remained slightly enlarged for a few months. The child was seen again a year later for a re-opening of the scar over the nodular gland on the right side, but the left side remained perfectly well.

These enlarged glands have been, and, indeed, are now, often termed tuberculous, greatly to the alarm of the parents. That they are not tuberculous is probable by the absence of extension to neighbouring glands, by the absence of systemic infection, and most of all by the satisfactory result—in the great majority of cases—of treatment directed to the tonsils. I wish particularly to impress upon you that in these cases it is the tonsils and not the glands which need treatment.

3. *Reflex Symptoms.*—The only reflex symptom that I have been able to attribute to enlarged tonsils is "cough." This may be short, dry, or hacking in character and almost constant, or occurring in paroxysms and distinctly spasmodic in character. It is difficult when "adenoids" are also present to say to which group the credit of the reflex should be given, but every now and then cases occur—such as the following—which seem to point definitely to the tonsils as a cause.

Case 3.—A boy, æt. 6¾, was sent to me by Dr. Alexander Bryce, on September 7th, 1900. The chief symptom complained of was "cough," which was frequent, croupy in character, and not benefited by treatment. The breathing was noisy at night. The tonsils—the left one especially—were enlarged and the surface of both was ragged. There were slight adenoids. I endorsed Dr. Bryce's opinion that the tonsil condition was the cause of the cough and a few days later did tonsillotomy and curettement of adenoids, completely curing it.

Case 4.—A boy, æt. 5, was sent to me by Dr. Tildesley on September 18th, 1900, for constant hacking cough, worse at night and causing restlessness and disturbing sleep. There was no thoracic cause or nasal obstruction or deafness. Both tonsils were enlarged and were soft in consistence and there were slight adenoids. Tonsillotomy and curetting of adenoids was done on the following day and the cough rapidly got well.

The diagnosis is simple. The possibility of tonsillitis accounting for the whole or part of the symptoms must be kept in mind; the presence of febrile symptoms and the inflamed aspect of the tonsils will clear up this point. A thorough examination should in all cases be made, the surface and condition often being of more importance than the actual size. When the examination has been completed (which should include the buccal cavity, pharynx, naso-pharynx, nose, ears, and lymphatic glands) the tongue depressor should be pressed backwards until the child retches; this brings the tonsils into relief and, especially in the flat forms, shows their full extent and condition.

The treatment resolves itself into the question of operation or not. The fact that the tonsils project a little more than is usual does not render tonsillotomy either necessary or advisable. It should be undertaken solely for the relief of some definite symptom or symptoms which cannot be satisfactorily treated by other means.

I consider operative treatment necessary when the tonsils are so large that they mechanically cause some obstructive symptom, even if otherwise healthy—when they are the centres for frequent or prolonged catarrhal attacks or acute inflammatory attacks; when they are the cause of lymphadenitis; when the crypts and recesses are filled with caseating secretion which does not yield to treatment; when they are the probable cause of a troublesome reflex cough. I consider it advisable when an adenoid operation is necessary even if the hypertrophy is not very marked.

The operation of tonsillotomy in children is now seldom performed except under an anæsthetic and in conjunction with an adenoid operation. The question of the anæsthetic, therefore, will be dealt with when the latter question is considered. Tonsillotomy alone may, however, be necessary in older children. Then local anæsthesia induced by applying a 10 per cent. solution of cocaine or eucaine is all that is needed, but if the child is nervous and sensitive nitrous oxide gas may be employed and will give ample time.

Various methods have been devised for the removal of the enlarged tonsils—a blunt-pointed bistoury and vulsellum forceps were used in early times and are still by some surgeons. The operator stands in front of the patient, seizes the left tonsil with the vulsellum forceps which are held in the left hand, and draws it towards the middle line and removes as much tonsil as possible by cutting upwards with the bistoury. If the surgeon is ambidextrous the right tonsil may be removed in a similar manner, the forceps now being held in the right hand; but if not ambidextrous it will be necessary for him to stand behind the patient. For a tractable child with projecting tonsils this method may be satisfactory, but the combination is not a common one and doubtless it was to overcome this difficulty that guillotines were invented. The earliest forms were very ingenious and consisted of a concealed ring knife and a transfixing spear, so attached that the tonsil was levered inwards whilst the ring knife cut through it. I am under the impression that the credit of this inception should be given to a French surgeon named Matthieu. His name is still associated with the instrument, although there have been many modifications with many names attached to them—Luer, Beehag, etc. To the late Sir Morell Mackenzie we owe the introduction of the spade guillotine and this type, though modified in many ways, and not always to the improvement of the instrument, has nearly displaced the French one. It is simple in construction and can be used with the patient in any position and with or without light. If properly used no difficulty will be found in removing the greater part even of the flat forms of tonsils. In my own practice I always use Mackenzie's pattern, from five to six inches in length, and with a well balanced metal handle. The method of using it is all important. If the patient is in the sitting posture the head must be steadied by an assistant who must make steady pressure just beneath and behind the angle of the lower maxilla at the time of the removal of the tonsil. The operator should stand in front of the patient for the removal of the left tonsil, to the right and slightly behind for the removal ot the right tonsil, unless he is ambidextrous or has a reversible handle to the guillotine. The guillotine should be warmed by dipping it in hot water. The first step is the proper engagement of the tonsil and here care must be taken to first encircle the lower edge. The second step is to press firmly the guillotine outwards and the third to press sharply home the blade with the thumb. These movements though distinct should be performed almost as one—steadily but rapidly.

The causes of inefficient removal or failure are due generally to a non-recognition of the first two movements and to the use of too large a guillotine, or more rarely to adhesions between the tonsils and the pillars of the fauces preventing proper engagement with the guillotine. When this latter is the case it is sometimes necessary to separate the adhesions prior to tonsillotomy. After removal the severed tonsil generally adheres to the guillotine and very seldom gives trouble by falling into the patient's pharynx, even in the lying down position. If the patient is in this latter position both tonsils can be removed by the operator standing on the right side or behind the head for the removal of the right tonsil if he prefer. If the patient is under an anæsthetic a gag must be used and it may be necessary to change it to the other side of the mouth after the removal of the first tonsil. If, however, it is carefully placed and managed by an anæsthetist who has had experience in these cases the change is seldom required. In a combined tonsil and adenoid operation the question arises which should be first removed. This depends upon the size of the tonsils ; if these are so large that they would interfere with the free exit of the curette or other instrument with the adenoids they must be operated upon first, but if not it is better first to remove the adenoids

After the operation no portion of tonsil should be seen projecting beyond the pillars of the fauces—preferably there should be a distinct hollow. Removal of a superficial slice is not enough ; the greater part of the enlarged tonsil must be removed, a small pad only being left. It has happened to me on three or four occasions to enucleate completely a tonsil with the guillotine, the blade—probably not over sharp—slipping over a convex surface not so embedded as usual. I have not known of any detriment following this, such as lodgment of particles of food in the hollow left, injury to the internal carotid by a sharp fish or other bone caught between the pillars of the fauces, or undue approximation of the pillars of the fauces. These are possible consequences and to obviate them a small pad of tonsil tissue should be left.

Other methods of operation—viz., with tonsil scissors, the cold wire snare, the écraseur, the galvano-cautery snare, morcellement, and crushing—may be occasionally advisable in adults, but as yet I have not found it necessary to adopt any of them in children. In a few cases in older children I have, when tonsillotomy has been much dreaded by anxious parents, employed ignipuncture with the galvano-cautery. A straight point is used and inserted into the substance of the tonsils, previously well cocained, at a bright red heat. It is not advisable to make more than two punctures at one sitting and usually three or four in all will suffice to achieve the desired result.

The risks of a well-performed tonsillotomy are practically *nil.* It is impossible to wound the internal carotid artery either with a guillotine or with a blunt pointed bistoury if ordinary care be used (a sharp-pointed one should never be used). The immediate hæmorrhage is at times free, especially if the whole of the tonsil is by any chance enucleated, but it generally ceases of itself, and I have never yet had occasion to tie a vessel or ever had any anxiety about it. Recurrent hæmorrhage—that is to say, hæmorrhage occurring within the first 24 hours after operation—is more serious; a large quantity of blood may be swallowed before the patient or the nurse is cognisant of it; in one or two instances I have known it continue to syncope before medical assistance could be obtained.

The first step in the treatment is to ascertain exactly the origin of the hæmorrhage, whether it is from a single vessel, in one or both tonsils, or a general oozing from one or both. If the former a pair of Spencer Wells forceps should be clamped on and left *in situ*, but I have never had occasion to do this in the case of children. If caused by a general oozing the bleeding surface should be well swabbed with adrenalin solution and chloride of calcium in from 5 to 10 grain doses, according to the age of the patient, should be given every hour until the bleeding stops. If the application of adrenalin does not suffice firm pressure should be made over the bleeding stump with a pad of lint, with or without adrenalin, and kept in position either by the finger or a pair of forceps, but I rely much on the calcium chloride. In one case where there was a distinct hæmophilic history I gave it for some days prior to the operation with a very satisfactory result, and I now frequently give it to adults beforehand as a precautionary measure.

True secondary hæmorrhage is rare, but it does occasionally take place even as late as the sixth day from the opening up of a small vessel during the separation of a slough. The following cases are illustrative of recurring and secondary hæmorrhage.

Case 5.—The patient, a boy, æt. 11, was operated upon at home, on Sept. 8th, 1896, at 9.15 a.m., for much enlarged tonsils causing obstructive symptoms, and for slight adenoids. Dr. G. Elkington and Dr. H. S. Wilson were associated with me in the case. Chloroform was given by the open method. There was less bleeding than usual at the time of operation although there was a predominance of fibrous tissue in the tonsil structure. The patient was carried back to bed and was kept very quiet all day. About 8 p.m., almost 11 hours after the operation, he commenced to swallow somewhat frequently and at 8.30 p.m. Dr. Wilson saw that blood was coming from the tonsils and applied a concentrated solution of tannin. This, however, did not prove effectual, as about 11 p.m. he vomited a large quantity of almost pure blood, certainly not less than two pints. A solution of perchloride of iron was now applied and the bleeding apparently ceased, the boy being blanched and almost in a state of syncope. I was sent for, but when I saw him at 2.30 a.m. the bleeding had ceased, the tonsils being coated with blood-clot and iron. The pulse-rate was 150 and barely countable. I remained in the house the rest of the night in case of need but there was no return of the hæmorrhage. His pulse rate 24 hours later had fallen to 85 and he made a slow but good recovery.

Case 6.—A boy, æt. 14, overgrown and very stout and flabby-tissued, came to me on Nov. 9th, 1900, for removal of adenoids, and enlarged tonsils, which were causing marked nasal obstruction and catarrhal trouble The operation was performed in a private hospital. The bleeding was profuse at the time of the operation but soon ceased. He was carried carefully back to bed and his throat again examined but there was no sign of hæmorrhage. Some two hours later, however, profuse hæmorrhage set in; the blood was swallowed and vomited and a good deal came freely through the mouth and nose. I was summoned and found him blanched, almost pulseless, with sighing respiration, and still bleeding; this I found to be a general oozing from the tonsils. Suprarenal liquid with chloretone was thoroughly applied to the oozing surface, 10 grains of chloride of calcium were given every hour, and a saline enema was slowly administered. Bleeding soon ceased, and did not recur and the boy made a good recovery. Had I to operate on a similar tissued boy I should now certainly give him a preliminary course of calcium chloride.

Case 7.—A delicate girl, æt. 11, was operated upon at home on Sept. 5th, 1900, in co-operation with Dr. F. W. Underhill, for enlarged tonsils and adenoids, causing right suppurative otitis media, cervical adenitis, and frequent catarrhal attacks. Nothing unusual occurred at the time of the operation, but Dr. Underhill noticed that subsequently the tonsil surface was more sloughy than was that of her brother who was operated upon at the same time. On the sixth day after the operation, as the weather was warm and sunny, the patient was out in the garden, running about, I expect, when she felt ill and faint. She came in and vomited a large quantity of blood; she was put to bed at once but vomiting and spitting out of blood continued. Messengers were sent for medical assistance and I was summoned. Before anyone arrived the child had bled to syncope and the hæmorrhage had ceased. I found her lying pallid and almost exsanguine. On examination a firm, adherent blood-clot was seen over the surface of the right tonsil and this I did not deem it advisable to remove. I ordered calcium chloride and made arrangements to be available in case of recurrence. Fortunately this did not happen and she made a good recovery, though for some time she was very anæmic. The hæmorrhage was clearly due to the separation of a slough opening up a small vessel.

Another risk, also a small one, is sepsis, with its probable complication septic pneumonia. It is impossible to sterilise the patient's throat prior to operation but possible sources of infection, such as carious teeth, alveolar abscess, etc., should be looked for and removed. Instruments can be and should be sterilised and the surgeon's hands rendered as aseptic as possible. Sponges, if used, should receive the most careful cleansing and sterilising; personally, I never use them but employ a swab of cotton lint wrung out of hot water for what mopping out is needed.

The patient's condition at the time of operation is also important. The operation is one of election and a time should be chosen when the patient is well and free from any febrile condition—when his tissues are in a fairly good state of resistance. The better his resisting powers the smaller the risk of sepsis. It need hardly be said, too, that the patient should be placed in the best hygienic surroundings that his circumstances will admit.

The treatment after operation is simple. The essentials are: (1) avoidance of exertion immediately afterwards (a fertile cause of recurrent hæmorrhage); (2) an equable temperature during the healing process (to prevent catarrhal attacks); (3) suitable diet; and (4) the use of a cleansing wash. The operation should therefore be performed at home or in a hospital, and the child should be put straight to bed afterwards in a warm room and kept there for at least three days and indoors the rest of the week unless the weather is exceptionally warm. Nothing hot or hard should be given; the first day sterilised milk only—cold or lukewarm; slop diet the next two days; then if the child is doing well ordinary light diet. If the throat is very painful when swallowing one-twelfth of a grain of cocaine lozenge may be given before meals, or the throat may be sprayed with a weak cocaine solution, but this is seldom needed. After food the mouth and throat should be washed out or sprayed with an alkaline antiseptic solution.

Should sepsis happen an examination will show the stumps of the tonsils covered wlth an ashy grey slough. The parts which surround the palate, uvula, and pillars of the fauces will be red, swollen, and flecked with whitish patches, the tongue will be furred, and the breath offensive, the cervical glands will be painful and enlarged, the throat will be painful, especially on movements of deglutition, febrile symptoms will be marked, and possibly ushered in with a slight rigor. When this happens a full dose of calomel should be given at once and after its action quinine or perchloride of iron. If the child is old enough and able to gargle, the mouth and throat should be frequently washed out with an alkaline antiseptic wash, such as borax, chlorate of potash and thymol, or with solution of chlorine. If the child is unable to gargle, the throat should be frequently sprayed with a similar solution and iodoform or one of its odourless substitutes insufflated over the sloughy surface. The strength of the child must be maintained by good nursing and feeding and a careful watch should be kept for any lung or other complications. A sloughy surface is often present in delicate children but without any spreading inflammation or febrile symptoms, and it clears gradually without special treatment as the healing progresses, and can hardly be called septic. Whenever sloughing occurs there is the possibility of secondary hæmorrhage during the separation process.

In the slighter cases where operation is not needed, and in the few in which for some reason or other operation is inadvisable, local and constitutional treatment should be instituted; cleansing gargles or sprays should be used, followed by the application of astringents, glycerine and tannic acid, hydrastis, etc., and iodine and iron, cod-liver oil, malt, and hypophosphites should be given internally. A long stay at the seaside or in the country often brings about a remarkable change for the better.

Chronic follicular or granular Pharyngitis.—The patches of adenoid tissue in the pharynx vary in size from a pin's head to an irregular shaped piece, perhaps half an inch in diameter. The lateral ones are not infrequently contiguous, and form ridges just behind the posterior pillars of the pharynx, which show plainly during the movement of retching. These bands form convenient routes for the passage downwards of catarrhal infection from the naso-pharynx. When hypertrophied the patches are raised above the surface of the mucous membrane, and if inflamed, they are of a bright red color. The blood vessels leading to them are generally dilated and tortuous. The symptoms caused by them are catarrhal and irritative. Like other adenoid tissues they seem peculiarly liable to invasion by micrococci, and the toxin then generated causes the associated lymphatic glands to be swollen and tender, just as in the case of the tonsils.

A sensation of tickling and irritation often referred to one spot is not an unusual symptom, and the cough thereby engendered is sometimes very annoying and distressing. In neurotic subjects various sensations, constriction or closing up of the throat, presence of a foreign body, etc., may be induced by them.

The treatment is to carefully destroy them, sub cocaine, either with a crystal of chromic acid fused on a probe, or preferably with the galvano-cautery.

[A number of illustrative specimens and instruments were shown at the end of the lecture.]

A NOTE ON HYSTERICAL MUTISM,*

WITH THREE CASES.

BY W. DUNCAN LAWRIE, M.D., F.R.C.S.E.

In Hysterical Mutism there is absolute loss of the power of speech, even the whispering voice is absent, but in distinction from organic aphasia the intelligence of the patient is absolutely unimpaired, and he is able to communicate in writing and by gesture in an extraordinary fashion. There is as a rule no paralysis of the lips or tongue, and no constant paralysis of the larynx. The onset is as a rule sudden after some emotion, and recovery may be equally sudden. Relapses or recurring attacks are frequent. Other hysterical symptoms may be present, or mutism may be the only symptom of the type of mind we recognise as hysteria.

Charcot claimed that hysterical mutism is an aphasia of a special kind, which can be diagnosed at first sight from aphasia of organic origin. The following three cases show that it may exist unrecognised for considerable periods. In one of them mutism existed for thirty-three years, a duration which I believe to be the longest on record.

Case 1.—S. U., Arnold, near Nottingham, æt. 37, married. An uncle is an inmate of a lunatic asylum. His previous health was good; he had been a noted boxer and heavy drinker. For some months he was troubled with giddiness and noises in the head. In November, 1895, he became suddenly unconscious, and remained so for three hours with jerking movements of the arms and legs. When he became conscious he was found to have lost the power of speech and could not even whisper. During the next fortnight he had frequent attacks of struggling and twitching affecting mostly the right side. The attacks passed off and the right arm and leg became paralysed and contracted. In the early part of 1896, when I first saw him he was quite mute, but intelligent, following the conversation and making his ideas known by signs, expressing approval by nodding, disapproval by shaking his head, and when vexed, by a sound through the nose which had a different emphasis according to the meaning he wished to convey. There was extreme rigidity of the right arm and leg, the fingers and thumb were flexed into the palm, and the hand on the forearm. The elbow was fixed at a right angle, and the upper arm was immovable at the shoulder joint and fixed to the side. The leg was fixed in the extended position and immovable at the knee and ankle. Endeavours to extend the fingers gave rise to pain and caused grimaces and a sound through the nose like the whimper of a dog. There was no analgæsia or anæsthesia, no paralysis of face, tongue, or eye. He walked with the aid of a crutch.

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* From a Thesis for the Degree of M.D., University of Edinburgh, 1900.

He was admitted to Nottingham Infirmary on 19th October, 1896, and I am indebted to Dr. W. B. Ransome, under whose care he was, for notes of his case. On 25th October intra-laryngeal faradisation was performed by Dr. Ransome and made him first yell and then talk. Next day he jumped out of bed, put his head through the window, and struggled violently with those who tried to prevent him. On October 27th, Dr. Ransome found him dumb and threatened the battery. He jumped out of bed and ran round the ward crying "Murder!" He was removed to the Borough Asylum, Nottingham, where he gradually improved, and was discharged on 18th November, 1896. He could then use his hand and was able to walk without help. The arm and leg gradually improved, and at the end of a year the contracture and paralysis had quite disappeared. The duration of mutism was twelve months.

Case 2.—W. F., æt. 18, South Normanton, Derbyshire. Nearly all his brothers and sisters are "nervous." Between the age of nine and ten he was thrown down while at play, falling with the lower part of the spine on a brick. His legs became weak, and he was obliged to use crutches. In two or three months his legs became "paralysed," with "loss of feeling in the feet," and he was forced to take to bed. was dim for a time; hearing not affected. At the age o suddenly lost the power of speech, with the exception of intervals, he was not able to whisper. He made hi known by signs and in writing. He had convulsive atta time to time. On one occasion the house went on fi made no attempt to speak or to move. In 1896 patient. He was then 18 years of age, and had bee to bed for eight years, and mute for five years, ception of a few intervals when he was able to whisp intelligent and able to express himself by signs and There was general wasting, slight flexion of the and also slight talipes equinus. There was no motor of legs, knee jerks normal, no anæsthesia, analgæsia, or loss of thermal sensation. No curvature of the spine or spinal tenderness or rigidity.

I came to the conclusion that the condition was due to hysteria, and explained carefully to him that there was no real paralysis, and that speech and motor power could both be regained if he chose to exercise his will. I then ordered him to say "ah," and after he had successfully said "ah," I made him pronounce the other vowels, and after a good deal of trouble he went through a part of the alphabet, and then began to speak. For about a month after this he stammered in his speech, and in about a month or five weeks he regained the use of his legs, with the help of massage. Ten months afterwards I found him at work. He ascribes his recovery to the hot and cold sponges used in the physical examination. Duration of mutism five years.

Case 3.—E. B., æt. 43, Birmingham. An uncle died of phthisis. Her mother is very nervous. At the age of 10, she had an illness said to be "low fever," and suffered from night terrors. After a few weeks she was unable to stand owing to weakness. She had attacks of vomiting, loss of appetite, and obstinate constipation. The weakness increased, and her chief desire was to be left absolutely quiet, without movement of any kind. Any interference or movement caused hysterical attacks, and she was allowed to remain in bed. Six months after the commencement of the illness she suddenly became mute. She also later had ptosis for twelve months. She had remained in bed and continued mute from that time till the time she came under observation, viz., thirty-three years.

In 1899 I found she was a little creature with an intelligent face. She readily communicates by signs, at which she is an adept. There is a lateral curvature of the spine. She makes no attempt to use her arms or legs. Her legs are wasted, flexed somewhat at the knees, and there is talipes equinus. Electrical contractility, normal. No anæsthesia, no analgæsia. Hearing and visual fields normal. By no means is it possible to get any sound from the patient. Her face retains a placid expression throughout. An attempt was made at home with intra-laryngeal faradisation without success, and as it was considered improbable she would improve at home, Dr. Kauffmann very kindly admitted her to the Queen's Hospital. During the first night there she was found out of bed, crying "ma." Her larynx was faradised, and she went home able to whisper. She has since had her arms and legs exercised and massaged. She can now speak in a low voice, can sing, use her hands and arms, but owing to the great want of muscular development, and the lateral curvature, she does not walk in very good style.

ETIOLOGY.

Charcot showed that mutism can be produced artificially by hypnotism, and may persist after the waking of the patient. The majority of cases on record occur in well marked hysterical individuals, male or female, with a neurotic family history. Although hysterical aphonia is so much more common in the female than in the male, hysterical mutism occurs quite as frequently in the male. Very often the condition follows a hysterical crisis, and is in many cases preceded by aphonia. Excessive alcoholic indulgence is a cause. It may come on after emotion; thus shock and fright are frequent causes. In one case it occurred in a girl æt. 11, after section of the tendo Achillis without an anæsthetic; another case occurred in a policeman after an outburst of anger; another in a railway guard after a railway accident. A slight laryngitis has been the immediate cause, and a case has been reported in which there was tubercular disease of the larynx.

Just as hysteria may occur in the commencement or during the course of organic nerve diseases, so hysterical mutism may be found and has been noted as an early symptom of locomotor ataxia, and disseminated sclerosis. In locomotor ataxia it may replace the laryngeal crisis. An examination of the larynx shows no constant paralysis. Cases of hysterical deafness throw some light upon the etiology. Thus in two cases it was noted that the patient obeyed unexpressed orders. The explanation of this is not that the patient is a malingerer, and not that the auditory word centre is incapable of action, but that the attention of the patient is occupied with a fixed idea, and so the intelligence is unable to make use of the auditory word memories, which are roused. In the same way in mutism, it is not because Broca's centre has lost its motor word memories, but because the attention is occupied and unable to make use of such memories in the production of speech.

COMPLICATIONS.

I shall do no more than refer to the ordinary symptoms of hysteria, which are such common accompaniments of mutism, viz., convulsive attacks, ovarie, pharyngeal anæsthesia, hemianæsthesia, areas of hyperæsthesia, motor paralysis and contracture, retraction of the visual fields, loss of colour vision, perversion of smell, taste and hearing. In a few cases agraphia or word-deafness have co-existed with the mutism. The following complications are worthy of special note. Thus in the series of 71 cases collected by Naties the tongue was paralysed in three cases, contracted in four cases, and painful in one case. There was spasm of the masseter in three cases. Spasm of the muscles of mastication, causing the mouth to remain half open, occurred in one case. Partial facial paralysis occurred in another case, and in another hiccough or respiratory spasm. In twenty cases I have collected, spasm of the masseters, rigidity of the abdominal muscles and pain in the diaphragm occurred in one case; the movements of the tongue and of mastication were difficult in one case; hemi-spasm of the face and tongue occurred in one case, and spasm of the glottis necessitating tracheotomy occurred in one case.

DIAGNOSIS.

The diagnosis of hysterical mutism is to be made from (1) organic motor aphasia, (2) the mutism of insanity, (3) malingering. From aphonia it is easily diagnosed, as the patient in mutism has lost the power to whisper, and there should be no cause for confusion with glosso-labio-laryngeal paralysis where the onset is gradual, the articulatory muscles are paralysed and atrophied and the patient is not aphonic.

1.—*Diagnosis from Organic Motor Aphasia.* The classic features of hysterical mutism so vividly demonstrated by Charcot, stand out in sharp contrast to an ordinary case of motor aphasia; thus absolute mutism combined with an active intelligence, the enhanced power of gesture language, and the rapidity with which the patient hastens to make his thoughts known in writing, contrast markedly with the condition found in organic motor aphasia, where usually the patient is not altogether mute and aphonic but can still utter a sound of some sort, a syllable, a word, a phrase, or an emotional expression, and the power of writing is usually more or less interfered with. In a few cases of organic motor aphasia the patient preserves the power of writing, and on the other hand in hysterical mutism agraphia is occasionally present. But even here some discrepancy in the symptoms will be discovered on careful examination, and the absoluteness of the mutism, the wonderful intelligence of the patient, and the hysterical stigmata which are so frequently present will guide to a proper conclusion.

2.—*Diagnosis from the Mutism of the Insane.* In hysterical mutism the intelligence is as a rule unimpaired. When delirium or mania coexist it may be difficult to diagnose between hysterical and other forms of delirium. But this is not important. Restraint in an asylum would be highly suitable for the case, provided only that when the delirium or mania has disappeared care be taken to again investigate the case, and so allow efficient treatment to be carried out.

Diagnosis from Malingering. The attempt to interview a perfectly intelligent but absolutely mute person is apt to prove an irritating procedure, and the interviewer very readily concludes that the patient can but will not speak, and is therefore a malingerer. Charcot ascribes this conclusion, which he says is a common one, to ignorance. The mark of the malingerer is that he overacts the part, and he may be tricked or surprised into speaking. In the *Medical Times* and *Gazette*, 1861, appears a note of a case of dumbness in the Philadelphia House of Refuge in a boy of 14, who was surrounded by people anxious to detect a fraud. Dr. Hewson suspected it was feigned and faradised over the larynx. After twenty minutes of faradisation the boy cried,—"enough." He afterwards confessed he had been deceiving. Possibly this was after all a case of hysterical mutism. The boy would fear the battery too much to contradict Dr. Hewson.

Taylor, in his Medical Jurisprudence, refers to the case of Reg. versus Yaguierdo (Herts Summer Assizes, 1854): "The prisoner, who was charged with wilful murder, was found by the jury to be wilfully mute. The man refused to plead, although it was obvious he was well aware of the proceedings. No counsel was assigned to him, as it could not be done without the prisoner's consent. He was convicted."

TREATMENT.

From what has been said under etiology it would appear that treatment should be directed to the attention, and indeed this is the case. An examination of the successful methods shows aim at restoring the normal relationship between speech centre. The attention may be with- external stimulus as by suggestion ng state, or by faradism or cold

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douches. Faradism has proved useful in a great number of cases. In a certain number after external faradisation has failed, internal faradisation has been entirely successful.

The attention has been startled out of its concentration by emotion, in one case the sight of a church on fire was sufficient to immediately bring about a cure. Again the attention may be gradually trained by well directed vocal exercises. Or on the other hand an attempt may be made to do away with the fixed idea by medical treatment; thus, bromides, chloral, chloroform or ether anæsthesia, and in one reported case alcohol, have all been successful. An emetic was sufficient in another case.

Of the first importance in the treatment of hysterical mutism, as of other forms of hysteria, is removal of the patient from her friends. Isolation is important, and massage and forced feeding in some cases are useful, where the general nutrition is affected. In all cases the patient should have a skilled nurse and should not be looked upon as an "interesting case" which may result in displacing one fixed idea by another, viz., that she is interesting. In short the first point in treatment is to treat the general condition. Tonics, sedatives, cold douches, all will have their place.

A great many cases recover spontaneously sometimes after a hysterical crisis or an emotion. One case was treated for five years without success and finally recovered spontaneously. Sometimes all treatment is equally inefficient, as in a case where bromide of potash, the faradic current over the trachea, endolaryngeal faradisation, anæsthesia under chloroform, and strong emotion, were all tried in vain. Hypnotism and suggestion were equally useless. Finally the case was cured by a combination of vocal gymnastics with hypnotism.

SOME CLINICAL REMARKS ON FORCIBLE FEEDING.

BY JAMES E. H. SAWYER, M.A., M.B., B.CH., OXON.,
LATELY HOUSE PHYSICIAN AT THE BETHLEM ROYAL HOSPITAL,
AND AT ST. THOMAS'S HOSPITAL, LONDON.

Although feeding by means of the oro-œsophageal tube, or by the naso-œsophageal tube, seems to be a very simple operation, yet a considerable amount of skill is required to overcome the difficulties which may arise, and to carry out the proceeding with the least possible unpleasantness to the patient. If the feeding be done clumsily or be made more unpleasant than is necessary, vomiting, which is liable to supervene after a long course of forcible feeding, will occur much earlier than it would otherwise have done, had the feeding been performed by one more skilled. Also, in cases where the feeding is very difficult on account of the resistance shown, it is most essential that the patient should not become exhausted by a long struggle.

The best form of oro-œsophageal tube to use is a flexible one of india-rubber, about 28 inches in length, and $\frac{7}{16}$ of an inch in diameter. It is very useful to have a white line marked round it, 16 inches from the end, which is inserted into the mouth, so that the length of the tube passed can easily be estimated. It is necessary to have a gag, which can easily be inserted, and the most convenient form to use is one which is opened by a screw, and which has the teeth very thin and close together. The insertion of the gag into the mouth is often almost impossible if the patient clenches the teeth tightly, unless there be a few teeth absent. I have made use of the space, on either side, between the last molar tooth and the ramus of the jaw, for the passage of a feather through this aperture to tickle the posterior wall of the pharynx, so that the patient retches; when retching is thus induced it is very easy to get the gag into the mouth. In patients, who are suffering from general paralysis of the insane, this method is of no use, as the pharyngeal reflex is nearly always absent by the time that forcible feeding becomes necessary. Often the mouth can be opened by pressing on the ramus of the jaw on each side with the tip of the finger in the aperture above mentioned. After such pressure has been kept up for a short time, the patient usually gives up the struggle and opens his mouth. Another way, by means of which the patient may be made to open the mouth, is to pass a feather or even the naso-œsophageal tube through the nose. Often when a gag can not be inserted the handle of a spoon can be pushed between the teeth, and after this has been accomplished a gag can easily be used. In passing the oro-œsophageal tube, I think that it is better and nicer to lubricate it with the liquid food that is going to be given and not with the usual bland oil; for the naso-œsophageal tube, however, lubrication with oil is preferable. The tube should be passed slowly and very little force be used, but it is useless to expect the patient to swallow it, as the act of swallowing can not be performed with a gag in the mouth. On account of the size of the tube, there is practically no danger of passing it into the trachea. If, while the food is being poured into the funnel, some is regurgitated back round the tube into the mouth, the feeding must be stopped and the tube withdrawn at once. The reason for this is, that the food, when it has once entered the mouth, can not be swallowed with the mouth open and the large tube in the œsophagus, and is very liable, therefore, by the next inspiration to be sucked into the trachea. When the patient strains and struggles the food is often regurgitated into the funnel, but by waiting or by getting the patient to talk, the fluid usually runs quite easily again. Sometimes the feeding by means of the oro-œsophageal tube and funnel is very difficult on account of this regurgitation. For this reason I have tried using a Higginson's enema syringe in place of the funnel, and I have found that it was very easy to feed the patient therefrom, and that the use of the syringe did not seem to add to the patient's discomfort. I can see no objection to gently forcing down suitable food by this method.

In withdrawing the tube care should be taken not to drop any of the liquid still remaining in the tube into the larynx. To prevent this, I always, firstly, withdraw the tube only a few inches, so that the end of it is not in the stomach; then I lower the funnel, so that any food in the tube will run out into it, and lastly, pull out the remainder of the tube quickly and during expiration. This also applies to the naso-œsophageal tube. There is another advantage in withdrawing the tube during expiration and that is, that if there be any tendency for the food to be vomited while the end of the tube is passing the pharynx, it is less likely to occur during expiration than during inspiration, since during the latter period the diaphragm is contracted and tends to force out the contents of the stomach.

The naso-œsophageal tube should be about 28 inches in length, and its diameter $\frac{5}{16}$ of an inch. The end of it is better to be rather stiff, for if it be very soft the patient can get the end into the mouth and there hold it by biting it with the teeth. The tube, after being well lubricated with olive oil, should be passed through whichever nostril is the more easy. When the tube has been passed into the pharynx, the patient's head should be raised a little, as in this position the tube can be more easily swallowed. Some patients become very clever in getting the tube into the mouth, and I have found that by putting a little of the liquid food into the tube, it will run out into the mouth and cause the act of swallowing, when nearly always the tube will be swallowed at the same time. There is, however, some danger in this method, as the fluid may run out of the tube into the larynx. The naso-œsophageal tube can fairly easily be passed through the larynx, and this mishap is nearly always noticeable at once by urgent coughing, and by air being breathed in and out through the tube. In cases in which the cough reflex has disappeared, the difficulty of ascertaining if the end of the tube be in the trachea is sometimes very great, and it is only by watching carefully that the operator can be certain that this is not the case. I had a patient under my care, who was suffering from tubercular meningitis, in whom the cough reflex was absent, and in whom it was much more easy to pass the tube into the trachea than down the œsophagus. It is also dangerous to pass the tube while the patient is shouting, as it then, nearly always, goes into the larynx. The patient should never be allowed to stand up just after tubal feeding, as, in some cases, it is accompanied by a considerable amount of shock, and a fatal syncope may occur.

In my judgment, the naso-œsophageal tube should always be used in preference to the oro-œsophageal tube, wherever it is possible. There seems to be more shock after feeding with the latter and the patient is more likely to vomit. With the oro-œsophageal tube a gag has to be used, and the teeth are very liable to be chipped or even broken off in the struggling which may ensue. When there is great difficulty in getting the patient to open the mouth, the use of the naso-œsophageal tube is usually much quicker. Patients, as a rule, prefer the naso-œsophageal to the oro-œsophageal tube, since, after the first unpleasantness of passing it through the nose, there is practically no discomfort, whereas, when the oro-œsophageal tube is being passed, and as long as the mouth is kept open by a gag, the attempts to swallow are very uncomfortable and even painful and often end in retching. Therefore, in patients who are prone to vomit, the naso-œsophageal tube is much the better one to use. Again, if there be any difficulty in breathing, which is not due to obstruction in the upper air passages, the naso-œsophageal tube is much more comfortable, as there is not such a large bulk in the pharynx to obstruct the passage of air. I think, therefore, that wherever it is possible, the naso-œsophageal tube should be used in preference to the oro-œsophageal.

REPORTS OF CASES.

A CASE OF ACUTE HYDROAMNION ASSOCIATED WITH UNIOVIAL TWINS.

BY G. A. GIBB, M.B., C.M., (ABERD.)

The patient, Mrs. H., was aged 31 years. The children of two previous pregnancies, aged 4 and 5 years respectively, were both healthy. She never had had a miscarriage, and had enjoyed good health and been regularly unwell up to April 15th, 1901. After becoming pregnant she never felt well, but had no particular pain, only aching in the limbs and languid feelings. She described her appetite as ravenous up to the time she was five months pregnant, when she began to suffer from excessive acidity of the stomach, a condition which caused great discomfort up to the time labour commenced. She did not consider the abdominal swelling larger than usual, until about November 15th, nine days before she was confined. About this date she noticed that she began to enlarge very quickly, the aching in the thighs increased and sometimes she suffered severely from cramp in the legs. The abdominal pressure, especially on the left side, was almost unbearable for two days before she was delivered. The first real labour pains commenced at 9.30 a.m. on November 24th., that would be when a few days over seven months pregnant.

I saw her at 12 noon and found the internal os opened to about the size of a five shilling piece, the membranes were stretched across it but did not bulge, and nothing could be felt presenting in the pelvis except the exceedingly tense fluid contents. On examining the abdomen the swelling extended almost to the ensiform cartilage and was slightly larger towards the left side. Nothing could be made out by palpation as the resistance appeared to be the same all over the tumour. There was no swelling of the legs or vulva nor any particular varicose condition of their veins. The excess of the liquor amnii was apparent, but as to the other contents I learned nothing.

At 2.30 p.m., the os was fully dilated, and as the patient was very faint and ill I at once ruptured the membranes. The liquor amnii escaped with such force that the vessel used to receive it had at first to be held about four feet from the vulva. About 110 ounces of liquor amnii was collected besides what went on the floor and bed. The patient at once expressed intense relief, and the uterus retracted firmly on the two fœtuses which could now be plainly made out through the abdominal wall, and a head presented in the pelvis.

The uterus did not contract strongly for about twenty minutes, and the head in the pelvis being small the examining finger could just touch the second head above and to the left of the pubis. When the presenting head descended on to the vulva it was felt to be covered by membrane, which was ruptured, and a few ounces of liquor amnii escaped and the head was at once born. After the birth of the first fœtus, the second head presented and the child was born after a few pains, the presentation in both instances being occipito anterior and to the left.

The first child born was the smaller, being only about half the size of the other, and was contained in a separate amniotic sac, with little liquor amnii, and which was only ruptured when the head came on the vulva, as mentioned above. The fœtuses were both males and were perfectly developed, the smaller breathed and cried when born, and lived three and a half days, but the larger only breathed after prolonged artificial respiration, and died in four hours, never having cried or breathed regularly.

After the birth of the fœtuses the uterus contracted strongly, and the placenta separated and was expelled with a few strong contractions. There was scarcely any hæmorrhage. A teaspoonful of ext. ergot. liq. was given when the membranes were ruptured. The patient made a splendid recovery, the temperature never being above normal, and on the 12th day the uterus could not be felt above the pubis. The mother appeared perfectly healthy, the urine contained neither albumen nor sugar and there was no history of specific disease.

Examination of the Uterine Contents.—1. Nothing peculiar was noted about the liquor amnii except the excessive amount.

2. The placenta when examined showed clearly the position and relation of the fœtuses. The only opening or break in the membranes was where they were ruptured into the amniotic sac of the larger fœtus, and a smaller opening near this, through the dividing partition between the two amniotic cavities into the sac containing the smaller child, and which was ruptured to allow its escape when its head was on the vulva. The sac of membranes which had contained the larger fœtus appeared to have six to eight times the capacity of that which had contained the smaller one, although the placental surface of the latter was as large, owing to the dividing partition extending across the centre of the placenta. There was only one chorion which was very strong and opaque, while the partition between the two sacs composed of the amnia derived from the separate fœtuses was very thin and transparent. The placenta was almost a perfect circle, with a diameter of about eight inches. The placental tissue on the side where the cord of the larger fœtus was attached was over one inch thick, this gradually thinning towards the other side where the other cord was attached until when near the edge it appeared almost non-vascular. The placental tissue was very soft and congested at its thickest part, and very pale and fibrous at its thinnest edge. The attachments of the cords when considered in relation to the circumference of the placenta, were most symmetrical, each being attached about two inches from its edge. The cord of the larger fœtus was about two inches shorter than that of the smaller, and though about equal in thickness the vessels of the former were enormously enlarged when compared with that of the latter.

3. *Examination of the Fœtuses.*—(*a*) The larger fœtus was well developed, but was sodden and dropsical. It weighed 4 lbs. 7¼ ounces, or 34,200 grains. The abdomen was

distended and the right lobe of the liver extended to within an inch of the umbilicus. The peritoneal cavity contained a quantity of pale straw coloured fluid. The spleen and especially the kidneys were very large for the size of the fœtus, but owing to pressure of time were only examined *in situ.* The liver weighed 1,026 grains, and though very much enlarged looked healthy but congested. The pleuræ contained a small quantity of serous fluid, while the lungs were congested, and the pericardium distended with the same sort of fluid as the pleuræ. The heart was very large, all the cavities being distended with blood. The walls of the ventricles were equally hypertrophied, the muscle being very firm and purple in colour. The heart, after being squeezed empty of blood, weighed 551 grains.

$\frac{\text{Body weight in grains}}{\text{Heart weight in grains}} = \frac{34{,}200}{551} = \frac{62}{1}$ nearly $= 1{\cdot}61$ per cent. of body weight. Normal weight of heart to body weight lies between ·89 and ·73 per cent. Say ·80 the normal $= \frac{1{\cdot}61}{{\cdot}80} = 2{\cdot}0125$. That is, this heart was more than twice the normal weight.

(*b*) The smaller fœtus weighed 2lbs. 15 ounces, or 22,560 grains. The child was perfectly formed, but was very thin and emaciated. The abdomen was retracted, but the liver could be felt below the costal margin. The abdominal cavity contained no fluid, the spleen and kidneys looked proportionate to the size of the fœtus, but the liver on removal was found to be greatly enlarged and weighed 780 grains. All the abdominal organs looked anæmic. The pleuræ and pericardium contained no fluid, and both lungs looked pale and bloodless. The heart cavities contained little blood, and the heart muscle was strikingly pale when compared with that of the other fœtus and the walls of the ventricles were particularly thin. The heart when squeezed empty of blood weighed 131 grains.

$\frac{\text{Body weight in grains}}{\text{Heart weight in grains}} = \frac{22.560}{131} = \frac{172{\cdot}2}{1} =$ heart $\frac{1}{172}$ of body weight or ·58 per cent. which is considerably below the normal.

Remarks. This case appears to be a good example of a rather rare condition, and would have been more interesting had not parental scruples prevented a more complete examination of the fœtuses. The features of the case undoubtedly support the conclusions arrived at by Dr. Thomas Wilson, in his elaborate paper on the subject read before the Obstetric Society of London, in 1899. He concluded that the excess of liquor amnii was due to fœtal influences, and if not entirely, was mainly caused by excessive secretion of urine on the part of the larger fœtus. The position and condition of the larger fœtus in this instance showed that it had practically a monopoly of the placenta over its fellow, the result of which was over-stimulation, increased blood pressure, congestion of all internal organs, cardiac hypertrophy, and great renal activity.

The high tension in the amniotic sac of the larger fœtus, I think, practically excluded fluid entering not only from maternal sources, but also from the fœtus except that passed as urine from its bladder. The force with which some male infants urinate immediately after birth justifies one in assuming that tension of fluid in the amniotic sac may be overcome by this means, when it would exclude effusions from all maternal and fœtal sources.

MEDICAL ABSTRACTS.

THE PROPHYLACTIC AND THERAPEUTIC INDICATIONS IN THE TREATMENT OF PHTHISIS, BASED ON A STUDY OF ITS SOIL.

BY DOUGLAS STANLEY, M.D., M.R.C.P.

Albert Robin and Maurice Binet.—*Bulletin de l'Académie de Médecine*, Jan., No. 3, p. 51.

This is a communication made by the authors to the Académie de Médicine, having reference to the study of respiratory chemistry in a large series of cases of phthisis. They find that in 92 per cent. of phthisical cases the respiratory capacity is diminished either absolutely, or in relation to the height of the subject. Pulmonary ventilation, that is to say the quantity of expired air, increases more than 8 per cent., carbonic acid over 64 per cent., and the total amount of oxygen consumed more than 70 per cent. Oxygen absorbed by the tissues 94 per cent.*

Whether it is a question of acute or chronic phthisis, or the patient be examined at the beginning or end of the disease, respiratory interchange is always increased in variable proportions. The authors have sought for a similar increase in the respiratory interchange in other diseases. The following analyses in forty different morbid conditions show that if some slight increase of respiratory interchange is present, taken as a whole, respiratory chemistry differs considerably from that met with in phthisis. This fact consequently becomes of use in the diagnosis, especially in the earlier stages, of phthisis since such phenomena are present from the very beginning. To explain this increase in gaseous interchange three hypotheses present themselves; an organic reaction of a defensive character against the invasion of the bacillus; secondly, an effect produced by bacillary invasion, or lastly, a peculiarity of the tissues involved, or, as the writers call it, the tubercular soil. The latter hypothesis almost appears established, as investigations into a number of persons showing a tubercular family history demonstrate the fact that respiratory interchanges are already increased, while in certain states antagonistic to phthisis, such as gout, they are on the contrary diminished. Increase in the respiratory interchanges is therefore a characteristic of the tubercular soil. Predisposition, whether inherited or acquired, means that the subject has got an increased aptitude to consume too much and to fix too much oxygen in the tissues, and to produce an over-abundance of carbonic acid. To demonstrate this proposition the writers examined the respiratory interchanges in a certain number of descendants of tubercular parents. In seven, aged from 8 to 14, there was no information obtained, but in twenty-one, aged from 17 to 20, respiratory interchanges were exaggerated in thirteen, normal in seven, and decreased in one. The authors, investigations still further demonstrated that this exaggeration of respiratory interchanges characteristic of a large number of phthisically predisposed patients may be acquired, alcoholism and fatigue being two conditions which have such a result. In the case of two young men without a morbid hereditary history, who gave themselves up to very marked excesses, the interchanges were considerably increased. In the case of a medical man, æt. 40, who had systematically overworked himself for a long time, there was also an increase in the respiratory interchanges, carbonic acid being 4·651 cc. average to 6·843 cc. per centimetre of height, while consumed oxygen rose from 6·511 cc. to 8·490 cc. In a similar manner anxiety, mental depression, and worry may also cause a rise in the figures representing respiratory interchanges. Muscular fatigue, prolonged insomnia, and strains upon the constitution, are followed by similar changes, and like results have been obtained by the writers from the investigation of a considerable number of alcoholic patients. The practical result of such investigations is the aid to an early diagnosis, not merely of an established phthisis, but of a liability to that disease. The bearing of this on prophylaxis is of the first importance, as it indicates not only what should be the surroundings of a patient liable to become tubercular, but it also gives a definite basis for medicinal treatment, as the action of certain drugs can be investigated in a similar manner, and those which promote the fixation of oxygen and an increase in the formation of carbonic acid can be eliminated from the treatment of the case.

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* These calculations are given per kilogramme of weight and per minute for the male. The figures are even higher for the female.

Drugs.—To demonstrate this latter point the writers investigated the influence exerted by a large number of drugs upon the respiratory chemistry, also the influence of different methods of feeding. These researches were carried on during a period of eight years and had reference to forty different kinds of drugs and 150 patients, and involved over 500 different analyses. The results obtained are now put forth and refer to rest, altitude, temperature of the air expired, the influence of cold and heat applied to the cutaneous surfaces, sea air and drugs such as arseniate of soda, Fowler's solution, cacodylate of soda, cod liver oil and tartarised antimony. The investigations have been carried out in the cases of persons with well developed phthisis, in whom the respiratory interchanges are much less easily modified than in those who are only phthisically predisposed. Rest is an important sedative so far as interchanges are concerned, as all forms of physical and mental exercise are accompanied by an increase in combustion. In fact, this latter can be doubled or trebled according to the kind of physiological work employed. Even attitude helps to vary the respiratory chemistry, as the writers have established the fact that less carbonic dioxide is exhaled by patients resting in bed.

The different advantages of heat and cold have often been discussed, some maintaining that the temperature of the air is only of secondary importance, that tubercular patients may be exposed freely to air and winter temperature provided they are sufficiently covered to prevent chilling of the cutaneous surface. On the other hand, according to Lannelongue, Achard and Galliard, the evolution of tuberculosis in inoculated guinea-pigs was more rapid in the open air at the sea-side, and especially on mountains, whenever the temperature was low, than in those animals confined in the laboratory where the air was damp, charged with ammonia, but having an even temperature. In fact, observations go to show that neither moderate cold nor slight variations of temperature have any marked influence, while great and rapid thermic variations precipitate the increase of the disease. To judge of the influence of temperature the writers carried out a special series of observations in order to ascertain if low temperatures might act directly through the expired air, or indirectly through the body surface. Five phthisical patients were placed in a special chamber in which the air was warmed to 36°–40° C. The patients were well clothed. In two of these patients the respiratory interchanges were increased as compared with similar estimations taken at a temperature of 17° C. In the other three, interchanges were diminished. Thus, respiration of warm dry air does not act in a similar manner in all cases of phthisis. It is possible that this fact might prove important as helping to ascertain whether a patient should be sent to a warm climate, or one which is more bracing. When air is warmed (47°) and saturated with vapour, interchanges are increased. In such a case, respiratory capacity rose from 4·74 cc. to 5·48 cc. per centimetre of height. Oxygen consumed rose from 5.642 cc. to 7·509 cc. per kilogramme, and carbonic dioxide given off rose from 4·388 cc. to 5·506 cc. Such investigations, if borne out by others, would show that warm and humid climates are very prejudicial to phthisical patients. In several cases where cold air was expired, respiratory interchanges were diminished, and in one instance they showed no alteration. The average for such was as follows: The total amount of consumed oxygen per kilogramme was reduced from 9·274 cc. to 8·585 cc. The amount of carbonic acid produced showed a diminution from 7·657 cc. to 6·884 cc. The respiratory capacity showed but slight alteration, being 11·37 cc. before and 11·9 cc. after the experiment. Consequently while the expiration of cold air seems to have but little effect on the pulmonary capacity, the quantity of absorbed oxygen and the amount of carbonic acid produced were diminished. Thus, the suitability of cold climates is borne out by chemical analysis.

The necessity, however, of having the cutaneous surface well covered is established. One curious point which has been brought out by these investigations, is that effect of heat on the cutaneous surface seems to be to reduce the capacity of respiratory interchanges, and that in marked degree as the average in several cases in which patients were placed in vapour baths at a temperature of 45° showed a reduction in the amount of carbonic acid produced from 8·968 cc. to 7·363 cc. per kilogramme, and the total oxygen consumed showed a reduction per kilogramme from 10·461 cc. to 8·514 cc. It is for this reason that the writers emphasise the importance of bodily heat during the respiration of cold air. It is well known that the effect of altitude varies considerably in phthisis, and a large number of analyses made by the writers confirm this fact and show that the personal factor is a most important one. They suggest that in all cases of phthisis, and in persons predisposed to phthisis, estimations as to the respiratory interchanges should be made previous to their going to a high altitude, and again after a short sojourn. Thus, the chances of benefit can be estimated in a practical manner. In this way the various influences as to the climatic treatment of phthisis can be explained. In another case which came under the observation of the writers, an interesting fact was elicited. The patient was a young girl with a hereditary history of phthisis, but no symptoms. She had broken down through overwork. After being kept completely at rest, she was sent for six months to Berck-sur-Mer. The differences before and after this change were very marked. There was a marked reduction in the amount of consumed oxygen and carbonic acid produced.

Cod liver oil, arseniate of soda and cacodylate of soda were investigated in a similar manner. In each case, estimation of carbonic acid produced and total oxygen consumed, showed a marked decrease, that for cod liver oil being 8·6 per cent. of the former and 11·5 per cent. of the latter. In the case of arseniate of soda the figures were respectively 26·3 per cent, and 27·7 per cent., while for cacodylate of soda estimations in five cases of advanced phthisis gave an average reduction of 17·1 per cent. for carbonic acid, and 26·6 for consumed oxygen, the dose of cacodylate being ·05 grammes daily. The writers include in their report several cases of persons with a marked predisposition to phthisis, who for various reasons, chiefly overwork, suffered from loss of appetite, were pale and easily tired. Treatment followed out in each of these cases was a period of absolute rest, careful diet, the exhibition of cod liver oil, cacodylate of soda, or some similar preparation. In all of these cases there was a marked reduction in the amount of respiratory interchange after treatment, as compared with careful analysis made at the time they came under observation.

The writers conclude their valuable paper by pointing out the great importance of this method of chemical analysis of the respiratory chemistry in cases of phthisis. Without wishing to minimise the importance of antibacillary treatment, they maintain that a wider view can be taken of the prophylaxis and management of phthisis, and one which embraces the respiratory physiology of persons who are predisposed but without symptoms or signs.

ANÆSTHETICS.

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Chloroform and Ether, and Mixed Anæsthesia.—Maurice Arthus (*L'Echo Médical du Nord*, August 18th, 1901) discusses the special clinical physiology and methods of administration of chloroform and ether in an interesting and instructive manner. His views well reflect those of the French schools. He begins his article by the following quotation from one of his own writings :—"Chloroform and ether act on all living organic elements and influence all their methods of physiological activity. Their vapours stop the protoplasmic movements of the amœba and leucocyte, the ciliary movements of protozoa and of vibratile epithelial cells, the rhythmical contractions of the hearts of batracians, reptiles and fishes when taken from the organism, the movements of the leaves of sensitive plants, the germination of seeds, the assimilation of chlorophyll, alcoholic, lactic, acetic, butyric acid fermentation, etc."

In man and the higher animals anæsthetics have a general action which shows itself *successively* on the tissues. Thus, in the first phase of action on the nervous system, there is suppression of the functions of the hemispheres and therefore sleep ; in the second phase there is suppression of medullary conductivity, and therefore complete anæsthesia without reflexes ; in a third phase there is suppression of muscular tonicity and therefore full muscular relaxation ; in a fourth stage there would be suppression of bulbar function, causing arrest of respiration and consecutively stoppage of the heart.

Every poison which, in a certain dose, causes suppression of a function, begins always in smaller dose to exalt that function ; excitation precedes and announces paralysis. This is the principle of *preparalytic excitation.* Thus before each of the phases above mentioned there is excitement.

The actual character and intensity of anæsthetic phenomena depend on the tension of the anæsthetic vapours in the blood and in the tissues, *i.e.*, if an animal breathes a gaseous mixture containing chloroform or ether under a certain partial tension, there is established by diffusion an equilibrium of tension between the anæsthetic vapour contained in the alveoli and the vapour dissolved in the blood. Also at the periphery across the walls of the capillaries there is established an equilibrium of tension between the anæsthetic vapours dissolved in the blood and those dissolved in the tissues. When these equilibria are effected the absorption of anæsthetic vapours in the lungs is arrested and definitely so provided that the tension of these vapours in the alveolar air remains constant, whatever be the absolute quantity of anæsthetic brought into the lungs by the inspired air. If the tension of the anæsthetic vapours in the inspired air be increased, a fresh quantity of them passes into the blood and thence into the tissues until a new condition of equilibrium is established between the air in the alveoli, the blood and the tissues. Anæsthetic phenomena corresponding in intensity to this new condition appear If the tension of the vapours in the alveolar air be diminished they pass out from the blood and tissues until equilibrium is again established.

If a mixture of air and chloroform containing 4 per cent. (*i.e.* 4 grammes of chloroform to 100 litres of air) be inhaled, anæsthesia does not occur however long the inhalation. With mixtures of 6 per cent. anæsthesia comes on slowly and with difficulty, but once induced can be kept up without trouble. By an 8 per cent. mixture anæsthesia is brought about in 10 to 15 minutes, while in a 10 per cent. it occurs in 4 to 5 minutes.

Ether and chloroform by their irritant action on mucous membrane, especially that of the respiratory tract, may bring about important reflex reactions of the circulation and respiration. These phenomena may be due either to impurities contained in the chloroform (*e.g.* hydrochloric acid arising from its decomposition) or to the pure drug itself when inhaled too suddenly, by surprising, so to speak, the mucous membrane or when the subject is in a state of exaggerated reflex excitability. These considerations are important, for they show us how to avoid the production of reflex phenomena.

The irritation of the naso-laryngeal mucous membranes causes more or less marked slowing of the heart which may even lead to syncope, both cardiac and respiratory. Syncope thus originating is called *laryngo-reflex or primitive syncope* to distinguish it from other forms of this condition. Laryngo-reflex syncope can be very easily caused in the rabbit, at least once out of four times, by making it suddenly breathe an atmosphere strongly charged with chloroform. It never occurs when chloroformed air is introduced through a tracheal cannula. The reflex travels centripetally along the branches of the trigeminal or the laryngeal nerves. Cardiac syncope results from a reflexion of the centripetal influx along the fibres of the vagus, the cardiac moderator: respiratory syncope results from inhibition of the respiratory centre.

Besides these primary accidents, which are the most important because they may lead to fatalities, may be mentioned cough, and increase of salivary secretion, which is frequent in man and constant in the dog. These various reflex phenomena arise much more easily at the beginning of chloroformisation because at this time chloroform exaggerates that reflex excitability of the centres which it suppresses later. If the administration of the anæsthetic be pushed too rapidly and suddenly there first occurs cardiac acceleration (150 to 160 very small beats have been seen in man), then slowing, and finally a cardiac syncope, called *secondary cardiac syncope* or *bulbar cardiac syncope*, preceding in general arrest of respiration.

The explanation of these different phenomena results from the following facts which have been established in the case of the dog. In this animal, as in man, is observed successively acceleration, slowing, and cardiac syncope, but *in the dog after section or physiological suppression of the vagi* (*the vagal moderator effect is not manifest in the atropinised animal*) only acceleration and subsequent slowing are seen; *final syncope is never* *observed.* Primary acceleration results from excitation of the accelerator centres, since it occurs without any possible inhibition of the moderator apparatus (when the vagi are cut, inhibition of the moderator apparatus is absolute). The consecutive slowing results partly, at least, from paresis or paralysis of the accelerator centres, because it occurs without any possible intervention of the moderator apparatus. Lasty, final syncope results from excitation of the moderator centres, since it only occurs if the intervention of the moderator mechanism be possible.

When chloroformisation is pushed too far it causes paresis, then paralysis, of the respiratory centre, bringing about *respiratory syncope* or *toxic apnœa.* Respiratory movements become small, superficial, and cease before the heart stops beating.

The accidents that may result from the administration of chloroform or ether are thus: 1. Primary laryngo-reflex, respiratory or cardiac syncope. 2. Secondary bulbar respiratory or cardiac syncope.

To suppress the *primary forms of syncope* excitation of the chief air passages must as far as possible be diminished. To this end pure drugs containing no foreign or irritating constituents must be used. The penetration of the anæsthetic into the air passages must be graduated, by causing the patient to inhale mixtures at first poor in the anæsthetic then progressively and slowly enriched therein. The use of a gradually increasing quantity of a standard mixture is to be commended if the necessarily complicated apparatus be not in the way. We must lessen the reflex excitability of the patient by giving him morphine or chloral before the inhalation, and administer atropine which by suppressing the cardiac moderator apparatus suppresses primary syncope.

If primary syncope occurs, either it is cardiac and irremediable, or else it is respiratory and then perhaps can be overcome by artificial respiration; inhibition of the respiratory centre is not definite in these conditions.

To avoid *secondary cardiac syncope,* we must suppress sudden increments (*les à coups*) of dosage and use a method of administration giving as nearly as possible results like those of a standardised mixture. It would be well also to submit the subject to the action of atropine which by suppressing the cardiac moderator apparatus suppresses secondary cardiac syncope. When this syncope occurs it is irremediable.

To avoid *secondary respiratory syncope*, the administration of the anæsthetic must be graduated, and a method adopted which as far as possible resembles that of the standardised mixture. The course of anæsthesia must be carefully observed and the dosage lessened when the oculo-palpebral reflex disappears. Administration must be quite stopped when respiration weakens and when the heart slows. When this form of syncope occurs it can be effectually combatted by artificial respiration, which permits elimination of excess of the anæsthetic and restoration of function to the respiratory centre.

To summarise, the great danger of anæsthetics is in primary or secondary cardiac syncope for it is irremediable. Cardiac syncope always results from intervention of the moderator apparatus. As this moderator apparatus is suppressed functionally by atropine we can by employing this drug prevent every irremediable accident of anæsthesia.

Unfortunately man bears atropine badly, careful physicians hesitate much to give more than some fractions of a milligramme, and they fear the drug so much the more because the sensibility of man to its action varies considerably in different subjects. Nevertheless the drawbacks of atropine can be overcome by associating morphine with it, and so greatly lessening its toxic action. If it be not wished to use atropine to paralyse the cardiac moderator apparatus, strict economy of the anæsthetic must be observed, *i.e.*, both during induction and maintenance of narcosis, and best so by the use of a standardised mixture, though usually this method is unpracticable. Economy of the anæsthetic can also be utilised by associating morphine or chloral with it: the mixed anæsthesia thus tends to lessen reflex excitability and the quantity of the drug needful.

Some operators employ chloroform, others ether. The action of the two is much alike, but (1) that of ether is slower and more gradual than that of chloroform, and (2) ether produces a cutaneous vaso-dilatation while chloroform causes cutaneous vaso-constriction.

1. Ether therefore widens the duration of anæsthesia and dissociates its phases. Thus, from the physiologist's point of view, it has the advantage. From a surgical aspect it has both advantages and disadvantages. The pre-paralytic period of agitation is increased and therefore objectionable. Anæsthesia is less quiet than is the case with chloroform, which lessens and sometimes suppresses the period of agitation. There is the advantage that bulbar cardiac syncope does not occur so suddenly with ether as with chloroform: with ether, syncope is preceded by a progressive slowing; with chloroform the phase of slowing is extremely short and may pass by unperceived; syncope shows itself, so to speak, like a flash. There is the drawback that secondary respiratory syncope comes on more unexpectedly with ether than with chloroform; with ether, in fact, respiration weakens very slowly, so much so that the slowing may pass by unperceived; with chloroform it occurs quickly enough to be easily noticed.

2. Ether, a peripheral vaso-dilator, causes a waste of blood in superficial operations; chloroform, a peripheral vaso-constrictor, economises it.

To summarise, chloroform acts more rapidly, and suppresses or weakens the phenomena of excitement; it saves blood and less than ether exposes to the danger of secondary respiratory syncope. Ether is less dangerous than chloroform in respect of the primary forms of syncope, and of secondary cardiac syncope.

Ether is to be preferred when the state of the subject or any other consideration makes us fear secondary cardiac syncope (lesion of the right heart or its orifices, as a sequel to chronic pulmonary affection). In long operations, in the case of lesions of the left heart, in infants (in whom secondary respiratory syncope easily occurs) chloroform is the better.

In surgical practice two methods of administration are used: *The method by sideration and the dosimetric method.* In the method by sideration or by large doses the patient has to breathe air saturated with the anæsthetic vapour. A compress charged with the liquid anæsthetic is placed in front of the nose in such a way that air can only enter by penetrating the compress and thus reaches the lung saturated with vapour (it contains 20 to 30 per cent. of chloroform), and the primary phenomena of anæsthesia are almost completely suppressed. Full anæsthesia occurs in two to three minutes and is then kept up by intermittent small doses.

This method is altogether to be condemned, for it is absolutely dangerous and brings about the best conditions for evoking the primary and secondary forms of syncope.

In the dosimetric method a drop of the anæsthetic is allowed to fall from a drop bottle into the compress; the patient takes a breath, then another drop is allowed and so on. Thus, in a sufficiently satisfactory manner the standardised mixture is made use of. If anæsthesia occurs too slowly (more than 10 to 12 minutes) two drops instead of one are poured out. To keep up anæsthesia two to three drops of anæsthetic per minute suffice. Thus we must distinguish between the *anæsthetising dose* (1 to 2 drops for each *inspiration*) and the dose for *maintenance* (2 to 3 drops each *minute*).

This is the method of choice for practical purposes.

The dosimetric method is the practical form of the *method of standardised mixtures.* This last needs complicated apparatus of which the simplest form is a gasometer of known capacity, and containing a measured quantity of chloroform or ether.

In studying the action of standardised mixtures on animals important results have been obtained. In particular have been noted perfected regularity of anæsthesia, absence of exaggerated excitement, suppression of primary or secondary syncope. It is unfortunate that the necessary apparatus renders its use almost impossible, although the attempts made in human surgery have given excellent results. Among other facts noted during investigations are the following: Whatever the mixture employed, death of the animal has always followed when administration of the anæsthetic has been prolonged enough: duration of life varied with the strength of the mixture. Thus a mixture of 4 per cent. (*i.e.* 4 grammes of chloroform to 100 litres of air) which never produces anæsthesia, causes death in 9 to 10 hours; the mixture of 6 per cent. which lessens sensibility without producing true anæsthesia kills in 6 to 7 hours; that at 8 per cent. which anæsthetises rather slowly kills in 4 to 5 hours; that at 10 per cent. which anæsthetises in some minutes kills in 3 hours; death occurs in 2 hours with a 12 per cent. mixture; in 40 minutes with 15 per cent.; in 30 minutes with 20 per. cent.; in 3 minutes with 30 per cent. We insist on the important fact of death by feeble doses without suppression of sensibility.

Coming now to mixed anæsthesia, supposing that in man one injects under the skin 15 to 20 milligrammes of morphine (or a salt of morphine) and that 20 to 30 minutes afterwards the anæsthetic be administered. Then anæsthesia can be produced with an important economy of the anæsthetic drug: morphine in fact depresses the cerebral hemispheres and in some way prepares them for the influence of the anæsthetic drugs. There is no longer any pre-anæsthetic excitement (often so violent in alcoholics and nervous people). There is no effective excitation of the respiratory tract, and therefore no primary syncope. There ought to be no accident from saturation of the organism with chloroform, for anæsthesia is produced with a smaller proportion (tension) of the anæsthetic. Lastly, for the same reason, late death from prolonged administration is less likely to occur.

It has been pretended that the morphine-chloroform and morphine-ether methods predispose to progressive stoppage of respiration, which weakens by insensible degrees, so that final respiratory syncope occurs without any striking warning. The fact is possible, but not certain. Besides, it matters little: respiratory syncope is not by itself fatal, and artificial respiration will overcome it. Again, it is enough to be forewarned of the possibility in order to avoid it by careful watching of the breathing, which is imperative in any case of anæsthesia without morphine.

It has been claimed that this method causes rapid and dangerous chilling of the subject. The fact is possible but not peculiar to this method alone. It occurs during every anæsthesia, being caused by muscular resolution, and can be avoided by taking obvious precautions against radiation of heat. This chilling is greater in the case of ether (cutaneous vaso-dilatation) than in the case of chloroform (cutaneous vaso-constriction).

It has been proposed to substitute chloral for the morphine, and to give 2 to 5 grammes by the mouth one hour before anæsthesia. Now chloral cannot safely replace morphine for this reason, that chloral by its action on the heart predisposes to cardiac syncope, which is the only immediate danger in surgical anæsthesia. Without doubt chloral does not introduce a very dangerous factor for it allows economy of the anæsthetic, but morphine presents no danger and does not predispose to cardiac syncope.

It has been objected that morphine predisposes more than chloral to respiratory syncope: this supposition is hypothetical and, even if true, its importance would be small, for artificial respiration will remedy respiratory syncope. Thus chloral has the problematical advantage, and a certain disadvantage; moreover, by producing an intense superficial vaso-dilatation, it predisposes to hæmorrhage, and thus does not, like morphine, permit economy of blood.

Lastly the atropo-morphine-chloroform method has been proposed. Atropine, as before noted, by suppressing the cardiac moderator apparatus suppresses cardiac syncope, both primary and secondary, and therefore any irremediable accident of anæsthesia. The use of atropine alone with chloroform is not to be advised, for on the one hand it does not allow economy of chloroform, and on the other it often provokes phenomena of extreme excitation, more noisy perhaps than dangerous, but better avoided. Morphine suppresses this excitement and economises chloroform.

The atropo-morphine-chloroform method is not merely a theoretical one; it has stood the test in physiological and human surgery. In the dog when standardised mixtures are not employed, nor a strictly dosimetric method, in a word, when operations are done as in the human subject, there are 30 per cent. of fatalities. Accidents never occur when the atropo-morphine-chloroform method is employed. About 20 minutes before chloroformisation 1 centigramme of hydrochlorate of morphia, and 1 milligramme of sulphate of atropine in aqueous solution, are injected for each kilogramme of body weight. Then a few inspirations of chloroform suffice to induce total anæsthesia, and to maintain it some inspirations every quarter of an hour from a compress containing a few drops of chloroform. Thus is realised a double economy of chloroform, viz., in the tension of the drug in the organism, and in the absolute quantity inspired.

In human surgery, 20 to 30 minutes before the inhalation, 1½ c.c. of a solution containing 10 centigrammes of hydrochlorate of morphine, and 5 milligrammes of sulphate of atropine, are injected hypodermically. Morphine has been charged with predisposing to respiratory syncope, with causing a tendency to collapse, and of increasing the nauseating effect of chloroform. The addition of atropine suppresses these difficulties.

The injection of 75 hundredths of a milligramme of atropine has in certain subjects been said to cause noisy excitement, but morphine largely diminishes this effect, which is not seen in practice. Some surgeons have proposed to reduce the dose of atropine to 20 or 30 hundredths of a milligramme. But would this dose paralyse the cardiac moderator apparatus or weaken it enough to remove all danger of syncope? It is possible, but one does not know it. Besides of what good is it to reduce the dose of atropine since the quantity indicated has been used hundreds of times without danger?

This method has lastly been blamed for not allowing full and immediate awakening after the operation. This objection can be applied to every method of mixed anæsthesia. Is it really a drawback? Is not post-operative sleep reparative, and is it not rather an advantage?

REVIEWS.

THE THEORY AND PRACTICE OF MEDICINE.*

The general scope and object of this work was referred to when the first volume was reviewed in a recent number of this paper. The second, which has followed the first with commendable absence of delay, deals with Diseases of the Blood and Nervous System, General Diseases, and Diseases the Pathology of which is Undetermined. There are also sections on Skin Diseases, Treatment in General, and Case-taking.

There is a great deal of sound common-sense and practical knowledge of medicine displayed in this as in the other volume, but throughout the book the extreme brevity and sparseness of detail detract very considerably from the value of the work to any but the most junior student. Some of the sections contain so little real information that they might have been omitted without much loss being entailed. The whole section on cutaneous disorders, with the exception of the opening chapter headed "General Remarks" which is worth reading, might well be omitted in its entirety if another edition is called for; it is too fragmentary to be of any real value.

The author pushes his scepticism in the matter of drug treatment to a degree that must prove disheartening to any beginner; and we certainly do not agree with him when he says that the value of valerian in hysteria and of arsenic in preventing bromide rashes is more than doubtful. In more than one place there is evidence of a want of experience in dealing with the conditions described. As for instance when it is stated that writer's cramp occurs " in the person of clerks, copyists, and others who gain their living by writing." As a matter of fact the greater proportion of cases occur amongst those who have very little writing to do, and it is well known that the worst cases are encountered in the heads of offices who have the harassment of brain work, rather than in the juniors whose duties include more actual writing of a mechanical nature, but whose responsibilities are less.

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* The Theory and Practice of Medicine, by Henry Walter Syers, M.A., M.D., Cantab. In two volumes, Vol. II. London: Rebman Limited. 1902.

The writer of these volumes is more trustworthy in discussing general principles than when presenting details of treatment. Thus the chapter on Treatment of Children in general is distinctly good, and we quite agree with what he says on the use of opium, belladonna and cod liver oil, and with his remarks generally on the dyspepsia of children. Just at the present time it is of interest to note that he strongly advocates the boiling of all milk used as food both for adults and for children, and that he considers the nutritive value is in no way impaired in the process.

We note also with pleasure that he lays stress upon the prevalence of a dyspepsia due directly to the excess in the use or abuse of tobacco—a fact often overlooked in hospital out-patient practice.

The scheme for case-taking is much too brief and quite inadequate for the proper training of students.

AN INTRODUCTION TO DERMATOLOGY.*

Taking into consideration the number already before the medical public, we should scarcely have thought that another elementary book on Diseases of the Skin was required. It seems, however, that as this is not a first edition the author has had sufficient encouragement to issue a second. Although it is not so good as a well-known small book on cutaneous disorders recently published, it has several points decidedly in its favour: it is well written, clearly expressed and free from obvious digressions. It is, therefore, what it claims to be in its title, viz., An Introduction to Dermatology, and as such can be recommended to students as a basis on which further study may be grounded.

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* An Introduction to Dermatology. By Norman Walker, M.D., Assistant Physician for Diseases of the Skin to the Royal Infirmary, Edinburgh. Bristol : John Wright and Company. London : Simpkin, Marshall, Hamilton, Kent, and Company. 1902.

The illustrations are a marked feature of this book. Although they have the defects which can scarcely be overcome in attempts to portray the lesions occurring in skin diseases by means of pictures, many of them are really excellent. The life-size patch of lichen planus is one of the best we have seen of this disease, but the accompanying illustration of the condition occurring on the leg—the limb being reduced to a length of six inches—is as indefinite as the other is satisfactory. Again, the attempt to reproduce the appearance of psoriasis on a nude trunk a few inches long must either make the lesion too small or increase its size out of all proportion. Cheiropompholyx cannot well be satisfactorily reproduced in black and white, so that the illustration of this condition is no worse than others of a similar kind. The photograph of pemphigus, reproduced by process, is very good, because the bullæ happen to be large; and the coloured plate of impetigo contagiosa is also excellent. The photograph of psoriasis on the other hand makes the patches of disease look almost black, a very unfortunate mistake. The pictures of the different kinds of leprosy and the one of actinomycosis are especially worthy of mention.

CLINICAL HEMATOLOGY.*

The subject of this book is one which is daily growing of greater importance from the clinical standpoint, and Dr. Da Costa has added in this volume a valuable contribution to the literature on the subject.

The book is one which will be most useful as one of reference to all advanced workers on the blood. To all beginners in the subject it is a book which we can confidently recommend, since the different instruments and methods of technique required in carrying out a full examination of the blood are exceedingly clear and full, while the descriptions of the instruments are materially aided by illustrations showing the methods of use. In his description of the preparation of dried blood films we notice that the author only describes the double cover glass method, the method which appears to us to be very much the most accurate in making differential counts. In addition to further illustrations interspersed throughout the text, the volume contains eight coloured plates which consist of remarkably good reproductions of all the various normal and abnormal forms of cells found in the blood stained both by Ehrlich's triacid mixture, and also by the eosin and methylene blue method. The plates of the malarial organisms are reproduced from fresh blood specimens.

The section on the Diseases of the Blood gives an excellent and complete description of the changes met with in these several conditions, while appended to each disease is a concise summary of the blood picture met with. The considerable number of well arranged differential tables throughout the book form a material help, not only in the comparison of the various blood states, but also in drawing out the points of distinction between the various forms of blood cells.

A rather short but clear section is devoted to the anæmias of infancy and childhood, describing the predominant characteristics met with during this period of life and the differences which exist between these and the corresponding conditions in adults.

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* Clinical Hematology: A Practical Guide to the Examination of the Blood with reference to Diagnosis. By John C. Da Costa, Junr., M.D. London: Rebman Limited. 1902.

The last and by far the largest section of the book deals with general hæmatology, the blood condition met with in sixty-eight diseases being described. These descriptions we consider almost throughout very satisfactory. We notice, however, that the author makes a statement that "the detection of the pneumococcus in the peripheral circulation is almost equivalent to signing the patient's death warrant." We can scarcely agree with him in this, as we have seen several cases make complete recovery after pneumococcic septicæmia.

TEXT-BOOK OF MEDICINE FOR STUDENTS AND PRACTITIONERS.*

PROF. STRÜMPELL'S Text-Book of Medicine has for many years been a representative one. It embodies the best features of German work, and its translation into various languages, not only European but Asiatic, is proof of its great importance as a text-book. The translation of the last German edition—the thirteenth—into English, by Drs. Vickery and Knapp, will be welcomed by all students and practitioners of medicine. This edition has been amplified by a chapter on Plague, and some other minor points, so that the work is thoroughly up to date. A feature of Strümpell's Medicine has been the description of the Diseases of the Nervous System, a subject which the author has made essentially his own. In this chapter, the recent ideas as to division, varieties, and pathology of the affections of the nervous system, come in for careful description and consideration.

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* Text-Book of Medicine for Students and Practitioners. By Dr. Adolf Strümpell. Third American Edition. Translated by Herman F. Vickery, M.D., and Philip Coombs Knapp, M.D. London: H. K. Lewis.

The Diseases of the Blood, Renal Disorders, and Hepatic Cirrhosis are among some of the most instructive chapters in the book.

There is certainly a German style about some portions of the work, especially those bearing on treatment, and it may be that those who read Prof. Strümpell for the first time will not feel quite at home. This feeling, however, soon gives way to one of considerable appreciation of the great excellence of the work.

We can heartily congratulate the editor and translators on the able manner in which the German edition has been rendered into English. They have made a valuable addition to medical literature.

THE CLIMATES AND BATHS OF GREAT BRITAIN.*

The first volume of the "Climates and Baths of Great Britain" was issued, if we remember rightly, in 1894. It was the work of a Committee appointed in 1889 by the Royal Medical and Chirurgical Society, and was published under the editorship of the late Dr. Ord and Dr. Archibald Garrod. The second volume just published by Messrs. Macmillan completes the work undertaken by the Committee, and is edited by Dr. Theodore Williams and Dr. Horton-Smith, its present chairman and secretary. In order to secure uniformity the meteorology of the same years, 1880 to 1890, has been investigated in each volume. It is to be regretted that the climates of Scotland have had to be omitted owing to the failure of the Committee to secure sufficient local co-operation.

The present volume deals with the climates of London and Middlesex (Dr. Ewart), the East Coast (Dr. Murrell), the Midland Counties (Dr. Horton-Smith), Lancashire (Dr. Maguire), the Lake District (Dr. Brooksbank), Northumberland, Durham and Yorkshire (Dr. Lazarus-Barlow), North Wales (the late Dr. Leech), South Wales (Dr. Theodore Williams), and Ireland (Sir John W. Moore). The Mineral Springs of Ireland are described by Dr. Norman Moore. Especial interest attaches to the chapter on the climate of London and Middlesex, owing to the great amount of detail which is characteristic of the work of its author, Dr. Ewart; but every section of the book has been prepared with the greatest care. The two volumes are a most valuable addition to medical literature.

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* The Climates and Baths of Great Britain. Vol. II. London: Macmillan and Company, Limited. 1902.

CLINICAL METHODS.*

We are glad to see that the excellent and widely read manual of Drs. Hutchison and Rainy has arrived at a second edition. It has become one of the established students' books on methods of clinical examination, and by the clearness of its style and the completeness of its contents has gained a high place in the estimation of both students and teachers. The new edition has been carefully revised, and evidences of judicious enlargement are scattered throughout its pages. The chapters on blood examinations, neurology, and clinical bacteriology have undergone the greatest alterations, and these sections are now well up to date, a description to which the whole book may fairly make claim.

BRADSHAW'S DICTIONARY OF MINERAL WATERS, CLIMATIC HEALTH RESORTS, SEA BATHS, AND HYDROPATHIC ESTABLISHMENTS.†

We have to acknowledge the receipt of this year's issue of Bradshaw's Dictionary of mineral waters, health resorts, and other kindred matters. The publication, although not so well known as it should be, is really one of great service to the medical profession, and should receive its hearty support. Brief details as to the geographical position of all European health resorts, their climatology, and special therapeutic claims, are to be found in its pages, and in the case of the more important places, the information is given in some detail. In many cases the name of one or more resident practitioners is added. The authors and publishers are to be congratulated on the excellence of the work.

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* Clinical Methods. By Robert Hutchison, M.D., M.R.C.P., Assistant Physician to the London Hospital and to the Hospital for Sick Children; and Harry Rainy, M.A., F.R.C.P. Ed., F.R.S.E., University Tutor in Clinical Medicine, Royal Infirmary, Edinburgh. New and Enlarged Edition. London, Paris, New York, and Melbourne: Cassell and Company, Limited. 1902.

† B. Bradshaw's Dictionary of Mineral Waters, Climatic Health Resorts, Sea Baths, and Hydropathic Establishments. London: Kegan Paul. Trench, Trübner and Company Limited. 1902.

SAUNDERS' YEAR-BOOK OF MEDICINE AND SURGERY.*

This excellent year-book is again divided into two parts, devoted to medicine and surgery respectively. The present issue fully maintains the reputation which the book has gained as one of the very best of the annual reviews of medical progress. In medicine, there is this year no very striking discovery to be recorded, and some of the sections—for instance, that on the diseases of the nervous system—are somewhat lacking in interest. The fault, of course, does not lie with the editors of the book. The most instructive section is, we think, that on the general diseases, and especially that part which deals with certain of the specific disorders. In surgery, especial interest attaches to the description of recent advances in the surgical treatment of gastric disorders, and a good idea is to be gained from this section of the prominence which surgery is assuming in dealing with these diseases. The volume also contains a record of work done in gynæcology and obstetrics, and in the special departments of ophthalmology and diseases of the ear, nose and throat.

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* Saunders' Year-book of Medicine and Surgery. Under the general editorial charge of George M. Gould, M.D. London and Philadelphia: W. B. Saunders and Company, 1902. Two vols.

Obituary.

GEORGE FOWLER BODINGTON, M.D., DURH.,

M.D. GIESSEN, M.R.C.P. LOND., F.R.C.S., ENG.

WE greatly regret to have to record the death, in his 73rd year, of Dr. George Fowler Bodington, which occurred recently in Paris, where he had made his home since his retirement.

The eldest son of Mr. George Bodington, surgeon, of Sutton Coldfield, of whose work as a pioneer in the outdoor treatment of tuberculosis Sir Walter Foster has recently reminded us, George Fowler Bodington was educated for the medical profession at Queen's College, Birmingham.

After taking the membership of the Royal College of Surgeons, and holding the post of House-Surgeon at Queen's Hospital, Birmingham, he visited as a ship's surgeon Natal and India. He spent some time practising his profession in the back settlements of Pietermaritzburg, where his fees were paid him in elephants' tusks, of which he brought away some hundreds of pounds' worth as the fruits of about eight months' work. At that time the elephant still roamed the forests of Natal; life there suited Bodington's hardy frame and adventurous disposition, and perhaps he may have sometimes regretted that he did not stay where he would have been certain to have made his mark. However, he returned to England, married, and settled in practice at Kenilworth in partnership with the late William Bodington, F.R.C.S., his uncle. In 1866 he moved to Middlesbrough-on-Tees and to Saltburn, where he remained until called to take the management of a prosperous private asylum established by his father at Sutton Coldfield, near Birmingham. Brought into contact with the vivid medical life of that great city, Dr. Bodington became an active member of its various medical societies, and afterwards bore a leading part in establishing the Birmingham Medical Institute, of which he was one of the early Presidents; he was also President of the

Birmingham and Midland Counties Branch of the British Medical Association in 1876.

He was at this time full of activity, taking an immense interest in all that made for social and political progress, and in particular he associated himself with the late Mr. Dalrymple in the movement to obtain legislation for the care and control of inebriates. But, meanwhile, two events happened of considerable importance; he lost his first wife and married again, while the asylum, owing to the falling in of the lease, had to be transferred to Ashwood House, Kingswinford, in Staffordshire. Unfortunately, the second Mrs. Bodington never enjoyed good health at Kingswinford, and after several years of trial, Dr. Bodington decided to sell the asylum and seek elsewhere, in a more congenial climate, a home for his family. After wandering for a year or two, he settled eventually in British Columbia, where he purchased a farm and carried on medical practice, but it is doubtful whether these ventures were altogether successful. The advance of civilisation in these western regions rendered a large lunatic asylum a necessity of the Province, and of this Dr. Bodington was appointed Medical Superintendent in 1895. His success in this work is well attested by the following extract from the report of his successor:—

> It was apparent that to bring about the required changes would entail an immense amount of work, and Dr. Bodington felt constrained, through the advance of years, to relinquish the labour to younger hands, and seek well-earned rest and retirement in the land of his birth, surrounded by the members of his family and his friends. In this connection I can truthfully testify that no greater general sorrow has been witnessed throughout the institution than that occasioned by the departure of the one who had taken the helm at a very trying time, and had safely piloted the hospital through some difficult passages, giving to it his best energy and utmost attention, though never in robust health, and having already arrived at that period of life when men hope to be able to forget labour and worry. Dr. Bodington's resignation was accepted by the Government, who voted him a retiring allowance for his faithful services, which terminated on February 28th, after six years of most arduous toil, during the greater part of which he was alone in the charge of the institution.

He came to England last year to visit his relations and to renew acquaintance with old friends, and he eventually settled in Paris, where his eldest son, Mr. Oliver Bodington, occupies an important position in Anglo-American legal and commercial circles. His death occurred after a very short illness, but his state of health had not been satisfactory for some time past.

Dr. Bodington was a man of magnificent physique and fine presence, a delightful companion, and an enthusiastic man of letters. His second wife died some years ago, but he has left a large family of children settled in Europe and Canada.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

Messrs. Burroughs & Wellcome send us samples of the following:—Tabloid Urea, gr. 5. This drug has recently received some recommendation for the treatment of tuberculosis and especially tubercular phthisis, mainly through the writings of Dr. Henry Harper, who has reported some good results obtained from its use. Our own experience has at present not been favourable, nor can the claim to usefulness be accepted as established. It must, however, be accorded a careful trial, and the preparation in tabloid form will tend to encourage investigation into its action.

Tabloid Hypodermic Hydrargyri Succinimidum, gr. $\frac{1}{5}$. The succinimide of mercury is a useful salt for intra-muscular injection. It is claimed that it sets up but little local irritation, whilst being therapeutically active.

Messrs. C. Oppel & Co. send us samples of Friedrichshall Mineral Water. The efficacy of this water in the treatment of habitual constipation is thoroughly well-established. The analysis of the Municipal Chemical Laboratory of Breslau gives the following amounts per 1,000 parts :—

Sulphate of Magnesium	6·2
Sulphate of Sodium	5·2
Chloride of Sodium	7·9
Chloride of Magnesium	4·9

New Books, etc., Received.

From W. B. Saunders and Company—

International Text-Book of Surgery. Edited by A. Pearce Gould, M.S., F.R.C.S., and J. Collins Warren, M.D., LL.D., F.R.C.S. Vol. i, General and Operative Surgery.

From Kegan Paul, Trench, Trübner and Company, Limited—

B. Bradshaw's Dictionary of Mineral Waters, Climatic Health Resorts, Sea Baths, and Hydropathic Establishments. 1902.

From Charles Griffin and Company, Limited—

Diseases of the Organs of Respiration. By Samuel West, M.A., M.D., F.R.C.P. In Two Volumes.

From Baillière, Tindall and Cox—

Clinical Lectures on Hydatid Disease of the Lungs. By Alfred Austin Lendon, M.D. (Lond.).

⁂ Authors can have reprints of articles at the following rates:—

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THE

BIRMINGHAM MEDICAL REVIEW.

AUGUST, 1902.

ORIGINAL COMMUNICATIONS.

THE INGLEBY LECTURES.

CHRONIC HYPERTROPHY OF THE FAUCIAL AND PHARYNGEAL LYMPHOID OR ADENOID TISSUES.*

BY F. MARSH, F.R.C.S. ENG.,
SURGEON TO THE QUEEN'S HOSPITAL AND LATE SURGEON
TO THE EAR AND THROAT HOSPITAL, BIRMINGHAM.

LECTURE II.

THE discovery of adenoids was primarily due to the application of the principles of the laryngoscope to posterior rhinoscopy. Although not the originator of the idea, Czermak was the first to practically apply the method in 1859, and the first to see adenoids in 1860, when he published an account of a case where he had observed two small tumours on the upper part of the naso-pharynx on the left side close to the opening of the eustachian tube, one portion of which somewhat resembled a "cock's comb." He failed, however, to grasp the true importance of the condition, as did Voltolini, though to a less extent, some five years later, when in 1865 he perceived with a rhinoscopic mirror stalactite-like growths projecting into the free cavity of the naso-pharynx. The patient, a man æt. 41, was under treatment for extreme deafness, which improved after the application of the electric cautery to these growths. In the same year Löwenberg published three cases of patients suffering from deafness, who had a condition of the naso-pharynx similar to a granular pharyngitis.

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* Delivered at the University, Birmingham, June 3rd, 1902.

In England, Andrew Clark, in the London Hospital Reports for 1865, gave a somewhat similar account of this condition, in a short article on "Nasopalatine Gland Disease," and called attention to the presence of "fætid cheesy masses," which he thought were contained in the cavities of the glands.

It was, however, reserved for Wilhelm Meyer, of Copenhagen, in 1868 to realise the clinical importance, and to give a more accurate and complete history of the condition and the name "Adenoid Vegetations." He made a careful microscopical examination of the structure and detailed methods of treatment.

It is interesting to note that he made an examination of 2,000 children in the National School of Copenhagen, and discovered the condition in 1 per cent.—very different to the result of an examination, recently made in England by Mr. A. H. Cheatle, of the ears of 1,000 school children in the Hanwell District School, who found that out of 50 per cent. with middle ear trouble no less than 38 per cent. had either adenoids alone, or with enlarged tonsils.

In 1875, Guye of Amsterdam read a paper on the subject at the International Medical Congress at Brussels, and Löwenberg published a monograph in the same year. The subject was again discussed at the International Medical Congress in London in 1881, Capart of Brussels, and Woakes of London, taking a prominent part.

This discussion was the means of directing general professional attention in England to the subject, and I can remember the almost universal smile of unbelief which greeted its mention. This credulity was hardly to be wondered at, as then to most surgeons the larynx and naso-pharynx, intrinsically, were *terra incognita*, and the methods of operating, especially that with the finger nail, did not appeal to the surgical mind. Even in 1884 Sir Morell Mackenzie did not fully recognise the fact that these "adenoid vegetations" were a hypertrophy of Luschka's tonsil, and analogous to the chronic enlargement of the tonsils. In Vol. II, page 490 of his book on Diseases of the Throat and Nose, published that year, when writing of chronic catarrh of the naso-pharynx, he says "in young subjects adenoid growths are sometimes present or there may be simple enlargement of Luschka's tonsil." His description of the appearance of adenoids too, was not quite in accord with that of to-day, as in describing them on page 499 he says, "as a rule they are rounded in form and vary in size from a hemp seed to a currant, but are occasionally much larger and often occur in clusters." In most other points, he is, however, singularly accurate.

Not much advance was then made until Hartmann and Gottstein devised their ring knives or curettes. The introduction of the latter, about ten years ago, rendered removal *en masse* practicable, and so gave in most cases a specimen representing the actual condition, instead of a number of small fragments. The frequent inspection of such specimens undoubtedly conduced to the exact knowledge we hold to-day.

Adenoids vary much in size from a small localised patch to a mass filling the naso-pharynx. Their consistence is, at first, softer than that of enlarged tonsils, owing to a preponderance of the lymphoid over the fibrous tissue, but at the age of puberty fibrous atrophy more or less takes place, and the consistence becomes more dense. This atrophic process is not invariable, as not infrequently adenoids are found retaining their soft lymphoid condition long past the age for the fibrous change.

Although there is so much difference in the size and shape of adenoids, it is very difficult to satisfactorily classify them. Normally, according to Lermoyez, Luschka's tonsil "consists of four to six parallel bands, delineating a series of concentric arcs which converge behind and in front like the lips of a vulva: when hypertrophied, these bands form the same number of small tongues, parallel posteriorly and placed together after the fashion of the leaves of a book; in the recesses which separate them the muco-pus accumulates, retained by the inflammatory adhesions which partially solder their lips together and form enclosures."

This arrangement of parallel ridges, and furrows or recesses obtains in most cases where the hypertrophy is at all marked, but varies considerably in degree. At one extreme the ridges or bands are smooth and rounded and the recesses shallow and even, the surface admirably showing the parallel arrangement—at the other extreme the recesses are deep, sometimes converted into cavities containing mucoid or caseating material, and the ridges are ragged and uneven, almost stalactite-like at first sight, but when examined maintaining the above form. Between these extremes a large number of cases are found.

When fibrous atrophy has taken place the surface is often left serrated and pitted, and occasionally small but distinct cavities opening on the surface are seen. The so-called Tornwaldt's bursa is simply one of the central recesses partly converted by adhesions into a cavity.

In some cases a portion only of these parallel bands hypertrophies, and an uneven "bossed" surface results—void of definite arrangement—and involving either the central or lateral regions of the naso-pharynx or both.—In these cases the lateral pharyngeal bands and the scattered patches on the posterior wall of the pharynx are often enlarged.

Bearing these points in mind the following classification might be made :—

1. *A central form* comprising (*a*) the ordinary form concentrically arranged—already described—with little or no lateral hypertrophy and (*b*) a central boss or pad, the prominent symptoms being impeded nasal respiration.

2. *A lateral form* with hypertrophy of the lateral bands most marked, and often extending into the fossæ of Rosenmuller, deafness being the prominent symptom.

3. *A diffuse form* with a general and irregular hypertrophy of all the lymphoid tissues in the naso-pharynx and pharynx, seldom attaining any great bulk, the prominent symptom being catarrh.

The symptoms, however, depend almost as much upon the size as upon the position of the hypertrophy.

They may be arranged in three groups: (1) obstructive, (2) catarrhal, and (3) reflex.

1. Obstructive symptoms are caused mechanically by the enlargement wholly or in part occluding the openings into the nares and eustachian tubes, and causing nasal obstruction and deafness, and a muffled or "dead" voice.

2. Catarrhal symptoms are due to the great suitability of the recesses as nesting places for the catarrh microbe, even more so than in the case of the tonsil.

With any diminution of tissue resistance the microbe gets the upper hand. The attack may remain a localised one, causing adenoiditis and temporarily increasing obstructive symptoms, or it may extend to the nasal regions, causing rhinitis, along the eustachian tubes to the middle ears, setting up an acute or subacute catarrhal condition with myringitis, or it may travel downwards to the tonsils, larynx, trachea, bronchi or gastro-intestinal tract according to the degree of tissue resistance and predisposition of the child. There is a great tendency for these attacks to become chronic, and difficult to cure.

Toxin, generated by the microbe, may be absorbed by the lymphatics and cause enlargement and tenderness, or suppuration of their associated cervical glands—the parotid set—just as in the case of the tonsils.

3. Reflex symptoms are more often due to adenoids than to enlarged tonsils. Instances of headache, cough, spasm of glottis, asthma and sneezing have come under my notice. More remote ones, convulsions, epilepsy, stammering, incontinence of urine, have been attributed to adenoids, but I cannot recall any case in my own experience that I could definitely put down to them.

The following cases are instances:—

Case 1.—The patient, a girl, aged 15 years, was brought to me May 7th, 1901, for daily frontal headaches. She was unable to breathe through her nose during sleep, which was never refreshing, and she was slightly deaf with colds. On examination she had marked Adenoids. Their removal under ethyl chloride afforded complete relief.

Case 2.—A child, aged four-and-a-half years, was seen by me with Dr. Bert Jordan, May 19th, 1901, for attacks of spasm of the glottis, which commenced on May 15th, a sequel of a catarrhal tonsillitis and adenoiditis. In August, 1899, some eighteen months previously, she had been operated upon by a surgeon for enlarged tonsils and adenoids causing obstruction to respiration. The spasms were very severe and alarming, and a trained nurse had to be with the child at night. On examination both tonsils were hypertrophied, especially the left, the surface was very ragged, and there was evidently a recurrence of the adenoids. As the catarrhal condition had subsided and the child was otherwise well, operation was advised and performed the following day; a large mass of adenoids was removed with the bulk of the tonsils. There was no return of the spasm, and the child has been strong and well since.

Case 3.—A boy, aged twelve years, was brought to me on account of frequent catarrhal and asthmatic attacks, which kept him indoors at home most of the winter. There were no obstructive symptoms, but adenoids were found to be present on rhinoscopic examination. These were removed January 9th, 1901. His mother informed me a few months ago that he had been quite free from asthma since.

Case 4.—A child, aged about six years was sent to me by Dr. G. Haddow for incessant sneezing, every few seconds, except during sleep. She was not a neurotic child, but was very placid and tractable, and allowed a thorough inspection of both nose and throat. Her tonsils were enlarged and adenoids were present, but I was inclined to think the reflex must be due to some intranasal irritation, although I could not find any hypersensitive area. I therefore applied trichloracetic acid to the upper area of the septum nasi on both sides, and ordered a menthol ointment. This made no difference, so about a week later, as the child was becoming exhausted, a tonsil and adenoid operation was performed. This was immediately followed by complete cessation of the sneezing.

Adenoids, if neglected, often seriously affect the development of the oro-nasal regions, the thorax and that of the body generally.

The development of the posterior nares is sometimes arrested, probably where adenoids have been present at birth or quite early in life. I have noticed that in some cases the arrest has been more marked on one side than the other. The naso-pharynx in these cases is generally similarly affected, being shallow and small. In some cases, on the contrary, the adenoids seem to alter the shape of the posterior nares, the upper margin losing its ovoid character and becoming angular, like an inverted **V**. The adenoids occupy this angle and increase the nasal obstruction. This condition is most often found in older children, 10 to 16 years old. More rarely the growth of the soft palate is impeded, and when the adenoids are removed, it cannot be approximated to the posterior wall of the pharynx, consequently the voice after operation is of a very nasal character. One such case has happened in my practice, in a girl æt. 7, and operated on some years ago. The cleft palate kind of voice was most disagreeable and a source of anxiety to the parents. I heard a short time ago that the voice had but little improved.

The anterior nares and nasal meati are often narrow, and the alæ nasi collapsed from disuse, and atrophy of the dilator nares.

When nasal stenosis to any marked degree exists, the growth of the superior maxilla is much interfered with and assumes an almost characteristic shape—the hard palate becomes high and arched, narrowed in front almost to a point—the **V**-shaped jaw. As a result the teeth have insufficient room, the upper incisors overlap, and the canines are crowded out, appearing in front or behind their proper position. The excessive arching tends to still further diminish the lower nasal air way. The mouth is constantly open, and the upper lid is drawn up, leaving the upper incisor teeth uncovered.

Narrow nostrils with marked depression round the alæ nasi, open mouth displaying overlapping teeth, drooping lower jaw, combine to make an almost typical facial appearance. The teeth, too, from constant mouth breathing, seem more prone to caries, alveolar abscess, and chronic pyorrhœa.

The effect on the thorax, especially when enlarged tonsils coexist, is very marked, the lungs are never properly expanded, the thorax remains narrow and contracted, the cartilages of the ribs fall in on each side of the sternum, the lower piece of the sternum is drawn inwards by the action of the attached fibres of the diaphragm. The child is pigeon breasted, with a deformed sternum. The general development of the child is bad, it is stunted in growth, and has little muscle power. From this cause it is given a slight exciting cause, much more liable to acquire such deformities as lateral curvature of the spine.

The sleep of these children is seldom good ; they are restless, turning about during half the night with the bed coverings thrown off, and the neurotic type are the victims of frequent night terrors.

The mental condition is also often unsatisfactory, especially when both nasal obstruction and deafness are present. The child becomes listless, capricious, irritable, inattentive, unable to concentrate his attention upon his lessons, and if possessing the typical facial aspect, looks stupid and vacant. Slow, if any, progress is made in education, and the child is often punished for inattention, though perhaps less so now that many teachers are fully alive to the possible cause.

This condition was attributed by Guye of Amsterdam, to interference with the lymphatic channels passing from the meninges to the nasal fossæ, and termed "Aprosexia," but no anatomical evidence in support of his view was adduced. I have, myself, only seen these cases of "Aprosexia" in association with deafness and nasal obstruction, which are quite sufficient in themselves to cause the condition. A limited hypertrophy only would block the lymphatic channels, and the condition would be almost universal instead of limited to a certain group.

In the majority of cases the history given is that the child has the mouth constantly open, snores at night, frequently catches feverish colds, is then somewhat deaf, and complains of earache, and does not "get on" well, and as Lermoyez graphically points out, is always being told to shut the mouth and blow the nose—the two things that cannot possibly be done.

The mother or a friend has often now diagnosed the condition in advance, and the diagnosis is not only made in drawing rooms of mansion or villadom, but in the doorways of byeways and courts. It is a common thing for a child to be brought to the Hospital to have "them things" taken out of his throat, as he is just like Mrs. Somebody's child who has recently had his "took out," and inferentially improved thereby. A difficulty the specialist has to contend with now is to convince some parents that adenoids are not the cause of their children's deficiencies, and I intuitively feel that occasionally they go away unconvinced, and will not rest until they have found someone who will take a view in accord with the opinion of the lay authority who first implanted the idea that the slight mental or physical imperfection was due to adenoids.

Although in most cases the symptoms alone are fairly conclusive, a careful examination, including the anterior nares and the ears, should always be made. I have seen one or two cases of deafness attributed to adenoids, due simply to an accumulation of cerumen. The presence or absence of incurvation of the drum is an important diagnostic point. Whenever there is deafness it is a good plan to inflate the middle ears with a Politzer air bag, both to show how much of it is due to defective aeration, and to enable a more reliable prognosis to be given.

Nasal obstruction, from hypertrophic rhinitis, deflection of septum nasi, mucous polypi, etc., or more rarely from a naso-pharyngeal polypus, sarcomatous growth, or meningocele, forms the common source of errors in diagnosis. I have only met with one case of meningocele, which occurred in my hospital practice, and was diagnosed by digital examination and under general anæsthesia, and two or three cases of sarcoma of the naso-pharynx.

Some of these conditions, all in fact but the naso-pharyngeal ones, may co-exist with the adenoids, and if not recognised and treated may prevent the full success of the adenoid operation. Having eliminated causes of error in ears and anterior nares, the naso-pharynx should be examined, to make the diagnosis absolute. Digital examination should not be the routine method. It is very unpleasant and alarming, and only called for in the few badly trained and-unmanageable children, who make any other method out of the question, and in a few with an excessive tongue reflex. I have to employ it now in a very small percentage of cases. My experience with children is that they are quite as tolerant of examination by posterior rhinoscopy as adults, and that as a rule there is no difficulty in obtaining a sufficient view of the naso-pharynx with a small mirror to show if adenoids are present.

In estimating the size of adenoids by this method, it must be remembered that they appear much less than they really are, owing to the necessary obliquity of the rays of light reflected from the mirror.

The size of the tonsils is sometimes an impediment to the introduction of the mirror, but when this is the case, adenoids are almost certain to co-exist, and, as tonsillotomy is necessary, the question can be determined and dealt with when the child is under an anæsthetic for this purpose.

The diagnosis having been made absolute, the next and all-important question is that of treatment, and this is determined by the symptoms rather than by the actual size of the adenoids.

Is an operation necessary, or advisable, or may the case be treated by other and milder measures?

Operation is in my opinion necessary or advisable for any one of the following conditions:—

1. Aural symptoms:—deaf mutism, catarrhal or suppurative middle ear trouble, temporary deafness from defective middle

ear aëration; (2) distinct nasal obstruction, especially if impeding development; (3) frequent and chronic catarrhal attacks interfering with health and education; (4) cervical adenitis, associated with adenoiditis; (5) reflex conditions unrelieved by treatment and for which there is no other apparent cause.

It is often advisable for improvement of the singing voice in older patients apart from other symptoms.

Milder measures may be adopted, when both adenoids and symptoms are slight in children near the age of puberty—when fibrous atrophy may soon take place and the nasal cavities enlarge, and should be adopted for cases where symptoms are absent although adenoids are distinctly present. In these cases cleansing and astringent solutions may be applied locally, with irrigator, spray or brush. Borax and salt, 5 grs. each, dissolved in 2 ounces of warm water, is an unirritating and simple wash. Carbolic acid should not be routinely used, as it tends to impair the sense of smell. After the wash an astringent spray (post-nasal) of chloride of zinc, glyc: tannic acid, hydrastis, alum, etc., as strong as can be tolerated, or the solution may be applied directly by means of a cotton wool applicator in the more tolerant children. Internally, iodine, iron, cod liver oil and hypophosphites are the standard remedies. It is in these cases, too, that systematic nose breathing exercises may be employed with a reasonable expectation of benefit. A sojourn at the seaside or on moorland will often do more than all these remedies, and will be much pleasanter to the patient.

It is instructive to follow the history of the operation.

The galvano-cautery was applied by Voltolini and others in a very vague manner to a few cases before the clinical significance of the condition was recognised, but the first definite attempt at complete ablation was made by Wilhelm Meyer with the ring knife devised by him. This was passed through a nostril and forcibly applied to the adenoids, with or without the guidance of a finger in the naso-pharynx. The shank of the knife was flexible, and could be bent to any desired curve. This method, suitable though it might be for slight diffuse adenoids, must have been very unsatisfactory for those of any bulk, in fact I should say it was impracticable to thoroughly ablate them. This difficulty must have been generally felt, for about the same time Löwenberg and Solis Cohen devised forceps for introduction through the mouth into the naso-pharynx. With these, small bits of adenoid tissue were cut or pulled out, the procedure taking considerable time. About this time the finger nail was advocated, and I regret to say adopted by some English specialists. The crushing and hæmorrhage would perhaps produce some temporary improvement, but a satisfactory result would only obtain in those slight cases where an operation was not needed. To assist those with a weak and feeble finger nail, Capart devised a steel one—doubtless less septic and more effective, but never efficient. Numerous varieties of forceps now began to appear, apparently almost every specialist deemed it incumbent to devise an instrument, or modify and endow someone else's with his name.

An advance in the technique was made by first removing as much as possible with forceps, and then applying the steel nail to clear the surface of debris, thus leaving it less ragged.

Hartmann's ring knife or curette marks the next advance. It was not altogether unlike Meyer's, altered and adapted for use through the mouth. The cutting edges were on the upper and posterior surfaces. After introduction behind the palate the blade was passed along a lateral wall of the pharynx until the vault was reached. It was then pressed against this and the posterior wall, and swept a few times from side to side, care being taken not to give the blade a lateral deflection. This, either alone, or preceded by the use of forceps, was the quickest and most satisfactory method until the introduction of Gottstein's ring knife a few years later. This differed from that of Hartmann in being shaped to cut through the adenoid tissue from before backwards instead of laterally. It gradually took the place of Hartmann's, but, like the forceps, has been the source of many modifications, chiefly in the curve of the shaft and the inclination of the cutting edge.

Of other instruments an adenotome made after the principle of a tonsil guillotine has been devised by Schutz, but though ingenious it is only suitable for central masses of fair size, and has never come into popular use.

Trautmann's curette is practically a Volkmann's spoon, with a suitable curve in its shank, and is suitable only for scraping small diffuse patches in adults.

The same may be said of the galvano-cautery, although several ingenious curette loops and points have been devised. The cold wire snare is in my opinion useless, and should never be used.

The apparent simplicity of some of these methods was mainly responsible for the idea that invaded the minds of the profession that removal of adenoids was devoid of risk, and could be undertaken without any special experience. The result of this was shown by the publication of statistics in 1896, reporting *eleven* deaths in England alone, in a little over two years, during operations under chloroform for removal of adenoids and enlarged tonsils, and by a decided increase in the number of disappointing results from incomplete operations.

The mortality of the operation should be nil, and probably would be if both the anæsthetist and the operator had special experience, or even if one only had experience. A skilled anæsthetist will steer the inexperienced operator safely through the operation, and the skilled operator will prove a safeguard to the inexperienced anæsthetist. It is the combination of inexperience that produce the mortality.

Incomplete operations—much to be deprecated, as they bring a most useful operation into discredit—are due chiefly to want of method. Using forceps, or scraping with a curette hither and thither without method, until no more tissue comes away, is neither a desirable nor an efficient procedure.

An anæsthetic should always be given. In children I prefer chloroform given by the open method, by which I mean dropping chloroform from a drop bottle on to a *single* fold of towel, flannel, or lint, shaped to fit over the mouth and nose after Lister's plan, or stretched over a wire mask like "Schimmelbusch's." The drops should be gradually increased in frequency and cover a greater area of the lint until the conjunctival reflex is quite abolished. At this stage the laryngeal reflex is unaffected, and there is no danger from suction of blood or debris into the air passages, whilst ample time will be given for the operation. Should further administration be necessary, which should seldom be the case, the back of the throat must be well mopped out with lint swabs, and the face turned well to one side, so that any blood may run out of the mouth. Care is needed now not to unduly press the anæsthetic, as it is more important than before not to interfere with the laryngeal reflex, as blood clot formed in the interval in the naso-pharynx may easily be drawn into the larynx and air passages.

I have never had a death nor witnessed one at this operation, but I think it highly probable that some of those reported may have been due to this cause.

If preferred by the anæsthetist, ether and chloroform may be given, either by the open method or inhaler, the same precautions being taken.

To older children and adults, " nitrous oxide gas " may be given if the case is a simple and uncomplicated one. The drawbacks to it are that one cannot tell beforehand quite what length of anæsthesia will be obtained, and in some cases jactitation causes difficulty and delay. In the majority of cases there is sufficient time for a thorough clearance to be made.

Gas and ether will afford much more time and may be employed if it is thought extra time may be wanted. An experienced administrator is a *sine qua non.*

Kelene or ethyl chloride bids fair to supercede gas. It has been administered to 20 cases—chiefly young adults—for me, by Dr. McCardie. It has given on the average about two minutes of anæsthesia and analgesia. Its advantages over gas are the longer time given, and the absence of congestion and cyanosis. Recovery from its influence is quite as rapid, and the patients are able to walk back to bed. No troublesome after effects occurred in my own cases. When it has been more extensively used, I believe statistics will show it to be much safer than chloroform or ether. No death has yet occurred in this country, and it must have been given to approximately 1,000 cases.

The following table of 1,000 cases operated upon by me in the Ear and Throat Hospital shows the proportionate number of chloroform and gas administrations to children 16 years old and under:—

Age.	Number.	Gas.	Chloroform.
In 1st year	8	—	8
„ 2nd „	17	—	17
„ 3rd „	48	—	48
„ 4th „	74	—	74
„ 5th „	105	1	104
„ 6th „	76	1	75
„ 7th „	71	2	69
„ 8th „	55	8	47
„ 9th „	51	5	46
„ 10th „	53	11	42
„ 11th „	37	16	21
„ 12th „	57	30	27
„ 13th „	49	32	17
„ 14th „	41	27	14
„ 15th „	34	30	4
„ 16th „	39	33	6
	815	196	619
Over 16 years	184	—	—
One case, 14 weeks old, no anæsthetic	1		
Total	1,000		

After trying many methods of operating, I have adopted the following as being both rapid and efficient:—

The patient is placed in a recumbent position, with the head and shoulders slightly raised on a low pillow. I have adopted this in preference to "the head over the end of the table" position, finding that the hæmorrhage is less and not a source of trouble, whilst the head is steadier and in a better position both for the anæsthetist and the operator.

The desired stage of anæsthesia having been reached, the mouth is opened with a suitable gag on the left side. A large size slightly curved Gottstein curette is introduced behind the palate, the handle being held firmly in the fist—dorsum upwards—and not as a scalpel or pen: the blunt edge is kept well against the septum and passed upwards to the pharyngeal vault until slight resistance is felt by the cutting edge meeting the adenoids. Firm pressure is made for a moment, and then a quick *tour de main* is made, taking the handle upwards, and the blade downwards. This makes a clean section of the adenoid mass and brings it, if of any size, into or outside the mouth. The curette is quickly re-introduced and a supplementary sweep made with it on each side to clear away any lateral fringe. An examination is now made with the finger to ascertain if the removal has been complete, if so, the tonsils are quickly removed, unless from their size it was necessary to remove them before the adenoids, and the child is turned well over on to his side to allow the free escape of blood through the mouth. This might be termed the normal operation, and its success depends chiefly on the proper engagement of the adenoids. If the curette is not kept well up to the septum an anterior fringe is very apt to be left, whilst if the curette is too small, crushed lateral pieces are left which may escape the supplementary lateral curettement. I use a No. 3 size Gottstein for all small children, and larger sizes for the older and bigger ones. The *tour de main* is largely a matter of practice, but when once acquired it can be accomplished with exactness and celerity.

If examination with the finger shows that removal is not complete the curette must be used again, or a small pair of Jurac's or St. Clair Thompson's forceps may be substituted if a fragment has been pedicled downwards. A small-sized Hartmann's curette is often useful to clear lateral processes from Rosenmuller's fossæ, and Meyer's ring knife is the most efficacious for clearing fringes extending into the inverted "**V**" shaped nostrils. The finger examination should always include the posterior nares, and the condition of the posterior ends of the lower turbinateds noted. If they are much hypertrophied, which is seldom the case in children, it may be advisable to deal with them at once by snare or otherwise according to their condition.

The risks of the operation, apart from a fatality at the time, which I have already dealt with, are slight.

Hæmorrhage is sometimes profuse, especially if the lateral plexus of pharyngeal veins is wounded, or mucous membrane torn away, but it rapidly ceases after the operation is finished. Recurrent hæmorrhage is very rare. I have only had one case, and that was in a hæmophilic patient, who had not thought it worth while to mention the fact.

Secondary hæmorrhage too, is as rare. I have only had one case, a child of 6. This occurred on the 5th day after removal of tonsils and adenoids, and was very severe—a large quantity of blood being lost. I saw the child the day afterwards with Dr. G. St. Johnston, and found the bleeding had not come from the tonsils. Chloride of calcium was given, rest in bed and suitable diet ordered, and no further bleeding took place.

Sepsis is another danger, but should not occur if proper aseptic precautions are taken as pointed out in the last lecture, when speaking of tonsillotomy.

Earache culminating in some cases in acute otitis media may be due to sepsis, injury to the tubal orifice, exposure to cold, imperfect removal of the adenoids, and injudicious syringing and irrigation after operation.

A slight febrile condition lasting ten days or longer is generally caused by inflammation of remnants of adenoids, or laceration of the mucous membrane.

At the conclusion of the operation, the patient is at once removed to bed—the head and shoulders being raised—and encouraged to sleep. The parents or friends—if a nurse is not in charge—should be warned that some blood swallowed at the time of operation will be vomited, or they will be much alarmed. Cool or luke warm fluids only should be given the first day, soft milk foods the two days following, the patient remaining in bed for this time. An aperient should be given if necessary on the second day. If on the fourth day the temperature is normal, the patient may be allowed up, but should be kept quiet in an even temperature and on light diet for a full week from the date of operation.

The degree of pain experienced after operation is very variable. The first few hours there is a good deal of soreness, and pain often referred to the ears and not to be confounded with earache, and some headache. If this is severe a few doses of phenacetin will give relief. Subsequently pain is only felt on movements of deglutition and is but slight after the third day. No local after-treatment is necessary or advisable, unless febrile symptoms develop, or if the naso-pharynx and the nose are stuffy, and the breath offensive. Then a cleansing alkaline wash (borax, grs. 3 to 1 oz.) may be gently sniffed or syringed through the least free nostril, and a powder of aristol and boracic acid insufflated. If there is earache, gentle inflation of the middle ears with a Politzer air bag, after the cleansing, will give relief and may prevent further mischief.

Should sepsis by any chance occur more vigorous treatment will be required, cleansing antiseptic washes or spray must be frequently used, and followed by insufflations into the naso-pharynx of aristol. A look-out must be kept for septic pneumonia or other complications, and suitable constitutional treatment employed.

When the patient is convalescent, nose breathing exercises should be carried out for a time to hasten the restoration of this function in those cases where it has been in abeyance.

If there has been previous middle ear trouble, regular inflation with Politzer's air bag is generally advisable for so long as any improvement is obtained by its use.

A course of iodine of iron is often of much benefit and a few weeks at the seaside is most desirable if it can be managed.

Disappointing results after operation occasionally happen, but if a careful examination is made both before and after operation, the disappointment may be foreseen and the parents prepared for it. For instance anterior nasal stenosis, chronic otitis media, perforated and cicatricial membranes, etc., should be diagnosed at the prior examination and allowed for in the prognosis. A guarded prognosis too should be given in all cases where the operation is undertaken for reflex symtoms. However probable it is that adenoids are the cause of the reflex, in no case can it be said that their removal will effect a cure.

Another source of disappointment is found in those cases where the symptoms prior to the operation were in part due to a general catarrhal tumefaction of the mucous membrane. This will recur with each fresh cold and produce similar but perhaps not quite such intense symptoms.

Atresia or arrested development of the posterior nares, a shallow naso-pharynx, hypertrophy of the posterior ends of the lower turbinateds, projecting vertebræ, undue projection of the eustachian prominences (which I have seen occupy quite half the space in the naso-pharynx), will be found either before or at the time of operation, and their bearing on the result should be explained.

A faulty operation is perhaps the most common cause of failure. If incomplete the persistence of the symptoms is attributed to recurrence—a great saving clause.

If, on the other hand, mucous membrane is torn away or stripped down, patches of granulation tissue will form, and if extensive may become exuberant and simulate a recurrence. I well remember some ten or twelve years ago reading in a medical journal—but I cannot recall the reference—a report of three cases, where, in spite of a clearance *down to the periosteum* a recurrence had taken place. I felt no doubt that the recurrence was a mass of granulation tissue.

A more remote cause of non-improvement of hearing is the occurrence of adhesions between the eustachian prominence and posterior wall of the pharynx. In some cases I have found Rosenmuller's fossæ almost obliterated.

The occasional voice defect from inability to approximate the palate to the posterior wall of the pharynx has already been referred to.

True recurrence is very rare. One can conceive of flat patches but little hypertrophied escaping the forceps or ring knife and subsequently enlarging, but I fear a faulty operation is the reason for most of them.

Of all operations complete removal of adenoids in suitable cases gives the most gratifying and successful results, results apparent to all brought in contact with the child, and it behoves us, therefore, to exercise every care to prevent disappointment by a careful examination beforehand, and by a methodical and thorough operation.

THE LEUCOCYTE CHART IN PNEUMONIA.

BY JOHN T. HEWETSON, M.D., F.R.C.S.

THE leucocytosis of pneumonia has been an established clinical fact for many years. Yet it is only recently that any attempt has been made to place an interpretation upon its existence and to study its phases from day to day.

Some two years ago whilst pursuing some observations upon leucocytosis in suppuration I took the opportunity of making similar examinations of the blood in the following cases of lobar pneumonia. A few details of each case have been appended with the blood count, in order to give a moderately clear picture of the severity of the attack. Pulse rate, respiratory rate per minute, and degree of temperature were taken from the chart by the bedside of each patient. They represent the highest point reached by the temperature, pulse and respiration at any time during the day upon which the corresponding leucocyte count was taken, and it is of interest to compare them with the simultaneous position of the leucocyte curve.

The hæmatological changes in pneumonia other than leucocytic are considerable, and I do not for one moment underrate their significance. Yet by far the most important change from the diagnostic and prognostic points of view is that exhibited by the white corpuscles. It is possible for every medical man familiar with the microscope to become proficient in leucocyte estimations, and as the entire process only occupies ten or fifteen minutes it ought to be feasible to the busiest. In private practice a leucocyte pipette can be carefully filled at the bedside, capped by small rubber caps to prevent leakage, and counted at the practitioner's leisure. If this were done every second or third day during an attack of pneumonia, it would be of material assistance to the physician in obviating errors of diagnosis and prognosis liable to occur in the course of this common pulmonary malady. It might be of value in determining early the exact nature of such a condition as central pneumonia. It might be the means of suggesting the early possibility of a grave prognosis; and perhaps most important of all it might prevent the not unfrequent misfortune of overlooking one of those latent forms of post-pneumonic empyema which is revealed in the *post-mortem* room.

Furthermore, during retarded resolution it cannot be safe to allow such a patient out of bed. The pneumococcus or pneumobacillus is still swarming in the lung, and removal from bed is quite sufficient to set the organism free in the blood, or cause it to migrate to the pleura, peritoneum, or elsewhere. I do not think there is any physical sign so satisfactory in determining when the pneumonic inflammation has ceased, as the state of the leucocyte curve. We are accustomed to watch the temperature chart with breathless anxiety, and once we note the crisis, our anxiety ceases. This, however, is not enough, for it is just during the convalescence that heat value is liable to mislead us. In retarded resolution there is generally little or no elevation of temperature, and even in many cases of empyema following pneumonia the heat value is so slightly increased that it would in all probability suggest nothing abnormal to the medical attendant. In private practice the thermometer is too frequently the all-important test of such complications as suppuration, and unless this useful instrument reveals definite fever, little or no anxiety is felt. It is because of the grave fallacy which underlies such a supposition as this, that I venture to press upon practitioners the value of leucocyte estimations. The necessary technique is by no means difficult, indeed, with a little perseverance it becomes one of the simplest clinical procedures. The information obtained by stained blood films is of less value in pneumonia than that by quantitative estimation of the leucocytes. It is, however, within the reach of all to glean some knowledge thereby. Films are best made upon specially prepared slides by means of cigarette paper. A delicate strip of this paper is held by one end, the other having touched a small drop of freshly drawn blood, is transferred to one end of the clean slide and then dragged gently over the greater part of its length. In this way a large film of blood is obtained, delicate in parts and easy to manipulate. The best stain in all probability is the Erhlich's triacid mixture, and it is very important to obtain Grubler's stains. For the perfect manifestation of this stain, fixation of the films by heat is almost an essential. The best results in my hands were obtained by a temperature of 105° to 110° for one hour. That this method of staining can produce very beautiful results there can be no doubt, its nuclear definition, however, is far from perfect, and in making qualitative counts of my films in fatal cases of pneumonia I had considerable difficulty in deciding whether certain oxyphilic leucocytes were uninuclear or polynuclear. For this reason I should recommend that films be also stained by some form of the eosine and methylene blue method, since the nuclear definition is so perfect by this process. Jenner's, Leishmann's, or Romanowsky's stains are excellent combinations of this latter method, and they have the great advantage of fixing and staining at the same time. It is quite possible for the medical practitioner to prepare and stain blood films, and the little labour which it entails would be amply repaid, not only by occasionally enabling him to diagnose or exclude such conditions as myelogenous or lymphatic leukæmia, but also by adding considerably to the genuine interest and perfection of his clinical work.

1.—J. R., æt. 21, male. Been in hospital three days, showing hitherto no physical signs of pneumonia; stools like a case of typhoid, slight rusty sputum. Daily temperature of 104°. Pulse 140 per minute. Respirations 36 per minute.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 1st	104	148	36	27440
Physical signs of pneumonia present for the first time. Widal's reaction negative on this day.				
June 4th	103	148	64	39260
5th Crisis about 8 a.m. Blood examined at 4 p.m.				
	99	130	34	26080
7th	97·5	96	24	14640
9th	98·6	72	18	17920
13th	98·6	72	18	6400

Patient discharged on June 20th.

The physician in charge of this case had considerable difficulty in making a definite diagnosis. The ordinary physical signs of pneumonia were absent until June 1st. The rusty sputum suggested pneumonia, the typical pea-soup stools suggested enteric fever. A Widal's reaction in the earlier days of such a condition is of course unreliable. Had leucocyte estimations been made in this case from the first day of admission, it is probable that a distinct leucocytosis would have been found, and thus enabled the physician to exclude typhoid. The condition was undoubtedly one of central pneumonia which later extended to the surface of the lung, and thus produced the somewhat delayed classical physical signs of lobar pneumonia. His recovery was uninterrupted.

2.—T. D., æt. 20, male. Lobar pneumonia. Lower lobe of right lung consolidated. Patient been ill eight days.

		Temp.	Pulse.	Resp.	Leucocytes per c.m.
June	1st	102	148	62	39680
	2nd	103	128	60	44480
	3rd	Crisis on this day.			
	4th	99	104	30	25760
	8th	98·6	80	20	6800
	16th	98·6	80	20	9840

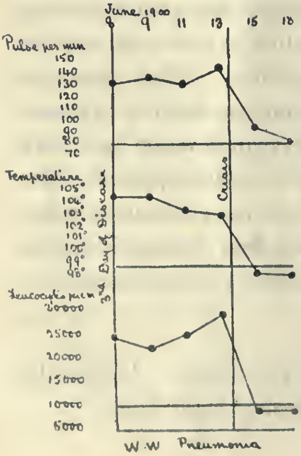
Discharged well on June 20th.

The recovery of this case was rapid; the leucocyte curve, although very high up to the crisis, fell within five days to its normal standard.

3.—W. W., æt. 36, male. Lobar pneumonia, middle lobe of right lung consolidated—2nd or third day.

		Temp.	Pulse.	Resp.	Leucocytes per c.m.
June	8th, 1900	104.4	130	32	24960
	9th	104·2	136	32	21200
	11th	103	142	42	24840
	13th	102·6	144	42	28080
Crisis about midnight of this day.					
	15th	98	96	26	9520
	18th	97	80	24	9280

Discharged well, on June 24th.



This case affords a very excellent example of the way in which the leucocyte curve in pneumonia so closely follows that of the temperature and pulse. It further illustrates how rapidly the leucocytes regain their average number per cubic millimetre, after the crisis in cases of moderately severe and uncomplicated pneumonia.

4.—A. F., æt. 14, male. A mild case of pneumonia of three days' duration. Small patch of consolidation at left base.

	Temp.	Pulse.	Resp.	Leucocytes per c m.
June 12th, 1900	103·6	133	40	17280
14th	103·6	150	36	9040
Crisis during the afternoon of this day.				
16th	98	72	30	7200

Discharged well, July 8th.

In this case, which was of mild severity, the leucocytosis disappeared a little before the crisis.

5.—W. P., æt. 21, male. Lobar pneumonia, right lung almost entirely solid. Duration of illness, two days.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 26th, 1900	104·4	96	24	3600

Differential count as follows :—	Per cent.
Polynuclear finely granular oxyphiles	80
Small lymphocytes	13
Large lymphocytes	5·4
Transitional cells	·8
Eosinophiles	·8

Sponged with tepid water four times in the day.

Oct. 27th, sponged with tepid water three times in the day. Physical signs of pneumonia present for the first time.

Oct. 28th	104	108	36	3760

Differential count as follows :—	Per cent.
Polynuclear finely granular oxyphiles	85
Small lymphocytes	10
Large lymphocytes	5

Sponged with tepid water three times in the day.

Oct. 29th	103·8	120	36	9360

Differential count as follows :—	Per cent.
Polynuclear finely granular oxyphiles	93·4
Small lymphocytes	3·8
Large lymphocytes	2·8

Sponged with tepid water twice in the day.

Oct. 30th	102·8	112	38	16800

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	92
Small lymphocytes	5
Large lymphocytes	2
Transitional cells	·6
Eosinophiles	·4

No sponging on this day.

Oct. 31st	102	96	30	14000

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	90
Small lymphocytes	5
Large lymphocytes	3
Transitional cells	1·5
Eosinophiles	·5

Nov. 1st	102	96	30	10560

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	90
Small lymphocytes	4
Large lymphocytes	3
Transitional cells	2
Eosinophiles	1

Rash resembling typhoid fever appeared on body. Spleen enlarged.

Crisis occurred on this day.

Nov. 2nd	98·6	72	30	9680
6th	98·6	72	30	4860

The patient was allowed to get up on Nov. 10th, and was discharged perfectly well on Nov. 15th.

This is without doubt an exceptional case. He was admitted with symptoms of influenza, associated with occasional hæmoptosis. The ordinary physical signs of pneumonia did not appear until Oct. 27th. It was quite evident that the patient, a man of great constitutional strength, was suffering from severe toxæmia, though never severe enough to suggest to us that his life was in jeopardy. In view of its severity I followed his leucocyte record with unusual interest, and I must admit that to give a correct interpretation of its reading is no easy matter.

On admission he was regarded as a case of acute influenza, and there is a remote possibility of it being a case of influenzal pneumonia. Influenza does not produce a leucocytosis, and whether the so-called influenzal pneumonia does or not, I am not in a position to state. The sputum was not, unfortunately, examined for pneumococci, tubercle bacilli, or influenza bacilli. Another point of interest in the case was the appearance on Nov. 1st of a rash resembling typhoid, associated with a large spleen. I do not think for a moment that this patient had enteric fever in the ordinary sense, nevertheless, I think it is to be regretted that Widal's test was not applied. Enteric fever, like influenza, does not in its uncomplicated state produce any leucocytosis.

The well-marked hæmoptosis in the early days of his hospital life suggested the possible existence of a tubercular element in the case; the fact of his mother dying from pulmonary tuberculosis appeared to strengthen this possibility. The patient, however, is at the present time (June, 1902) well and strong, and as far as I could gather from his friends perfectly free of any pulmonary trouble. Another interesting feature of the case is the employment of cold sponging during the first four or five days of his illness; this was the only case in which such treatment was adopted.

Apart from all these possible influences one cannot help thinking that certain constitutions might be so physically robust that even a severe dose of pneumonic toxin can be treated so to speak with contempt. Then again certain human mechanisms may possess a distinct idiosyncrasy in reference to, this vital function of leucocytic reaction, just as they may in reference to pulse or temperature. Children certainly react more readily than adults.

It is rather a remarkable fact that on Oct. 28th and 29th, when no leucocytosis exists, there is a distinct increase in the ratio of polynuclear finely granular oxyphiles, and that this increased ratio steadily becomes more marked until Oct. 30th, the same day as the maximum quantitative count. Polynuclear coarsely granular oxyphiles were absent from the films taken on Oct. 28th and 29th, and reappeared towards the crisis.

6.—C. B., æt. 30, female. Lobar pneumonia, small patch of consolidation at left base. Fifth day of illness. Mild attack.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 29th, 1900	103	120	30	20000
30th	102·8	120	30	17120
Crisis during the afternoon of this day.				
31st	98·6	80	25	8400
June 2nd	98·6	72	22	6160

Discharged well on June 7th.

The leucocyte curve evidently commenced to fall before the crisis.

7.—T. W., æt. 14, male. Acute lobar pneumonia; slight consolidation at right base. Been ill three or four days.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 22nd, 1900	104·8	132	32	26240
23rd	98	100	26	12480
24th	97	84	20	10400
29th	98·6	76	18	8240

Discharged well on June 3rd.

This boy was ill probably longer than he admitted, otherwise it is an abortive form of pneumonia.

8.—J. C., æt. 13, male. Lobar pneumonia. Duration of illness, four days. Cyanosed and apparently very ill.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 10th	104·6	132	30	20880
11th	103·8	112	48	20726

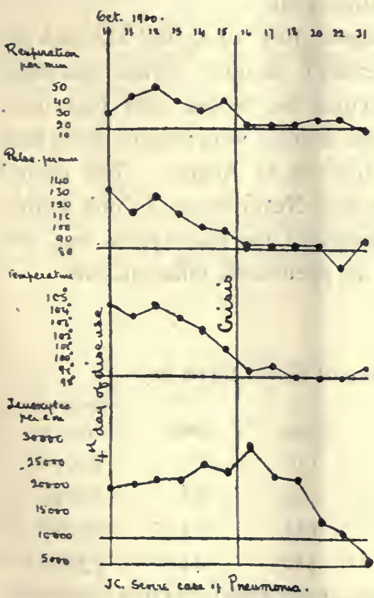
		Temp	Pulse.	Resp.	Leucocytes per c.m.
Oct.	12th	104·4	128	52	21200
	13th	103·6	112	40	21200
	14th	102·6	108	36	25600
	15th	101	100	40	23760

Differential count on this day as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	89·4
Small lymphocytes	4·4
Large lymphocytes	4·2
Polynuclear coarsely granular oxyphiles	1
Transitional cells	·8
Myelocytes	·2

		Temp	Pulse.	Resp.	Leucocytes per c.m.
Oct.	16th	99	88	20	27840
	17th	99·6	82	20	21800
	18th	98·6	84	20	21680
	20th	98·6	85	22	13640
	22nd	98·6	60	22	11040
	31st	99·6	90	18	5920

Discharged well on Nov. 4th.



At the crisis, which was about Oct. 15th, there was 1 per cent. of polynuclear coarsely granular oxyphiles in the blood. The condition clinically suggested a somewhat grave prognosis, and in view of this anxiety it is of interest to observe that his leucocytosis was well maintained until three days after the crisis, after which it steadily disappeared.

The accompanying chart is a very good illustration of the leucocyte record commonly seen in cases of severe pneumonia.

The leucocytosis is not so well marked as usual, but it illustrates clearly how that in severe pneumonia the leucocyte numeral is maintained for several days after the crisis, and that the fall to normal is gradual.

9.—W. H., æt. 7, male. Lobar pneumonia. Been ill three or four days.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 14th	104·4	133	36	21040
16th	100	110	28	19360
19th	99·4	120	32	22480
27th	98·4	96	30	19200

Aug. 27th. The boy is still convalescing; going about the ward; looks very pale and there are extensive coarse crepitations over the base of the pneumonic lung.

Aug. 31st	99	88	28	21200
Sept. 3rd	98	96	22	10240

Discharged well on September 15th.

This boy had his crisis about July 19th, and although my leucocyte record is very imperfect it is quite certain that there was a very distinct leucocytosis six weeks after that date. Coarse crepitations and relative dulness were present at the base of the pneumonic lung until the end of August. The pleural cavity was never explored for pus. Nevertheless, I think it fairly certain that this long maintenance of the leucocytosis was due to a retarded resolution of his pneumonic inflammation.

10.—F. B, æt. 6, male.

Double pneumonia, duration of illness three days.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 17th	102	120	60	51040
18th	101	124	64	53640
19th	101·8	132	54	54480
21st	100	120	44	73280

22nd This day probably witnessed the crisis of the case.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 22nd	98·4	96	32	55860
23rd	98	96	32	44860
24th	98	96	30	34320
29th	98	98	22	27760
June 1st	98·6	—	—	21760
6th	98·6	—	—	20560
11th	98·6	—	—	18720

Dulness and coarse crepitations still persist at the bases of both lungs. The child is pale, unnaturally quiet but complains of no pain.

18th	—	—	—	32160
22nd	—	—	—	44480

Differential count upon this day as follows: –

	per cent.
Polynuclear finely granular oxyphiles	83·6
Small lymphocytes	11·6
Large lymphocytes	2·6
Transitional cells	1
Polynuclear coarsely granular oxyphiles	·6
Myelocytes	·6

27th	97·8	92	22	19520
30th	99	—	—	16720
July 4th	100	106	32	33120

Patient looks ill, perspires at night, dulness at right base, exploring needle introduced no pus revealed.

9th	99	88	22	20080
13th	98	—	—	16640
20th	98·6	—	—	16080

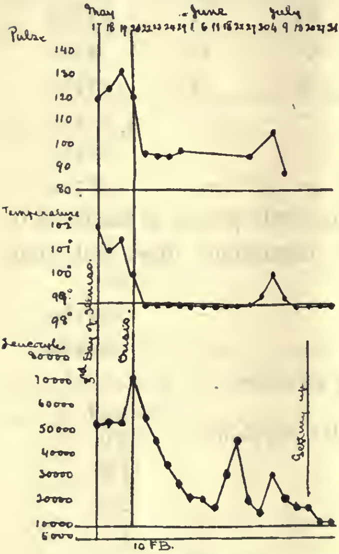
Patient is now getting up.

27th	98·6	—	—	11680
31st	98·6	—	—	12000

At this stage the boy was allowed to get up. The dulness at the right base was almost imperceptible, he had ceased to perspire at night, though he still remained pale and languid.

Discharged well on Aug. 11th.

The resolution of this case lasted something like three months. It was primarily a severe pnuemonic inflammation accompanied by such vigorous leucocytic reaction that on the day of his crisis, the leucocytosis was 73000 per cubic millimetre. From this maximum his leucocyte curve fell steadily for three weeks, at which date it stood at 18000 per c.m. Then we notice a very distinct rise in the leucocyte curve, accompanied by some elevation of temperature and increase of pulse rate. This second exacerbation lasted about two weeks, and then slowly subsided until the boy left hospital for a convalescent home.



Such a leucocyte record cannot exist without a very definite reason, and it is all the more striking because the heat value, pulse, and respiratory rates were approximately normal. A dull area existed in the right axilla for weeks after the crisis. The boy never complained of pain, yet it was not difficult to see that he did not improve as he ought to have done. The question of suppuration arose on several occasions, and an exploring needle was introduced more than once, but pus was never discovered. So that one is driven to regard the case as in all probability one of retarded resolution rather than a lung abscess, or purulent pleurisy.

11.—A. F., æt. 7, male. Lobar pneumonia in lower lobe of left lung. Duration, three days.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 13th	102·8	116	56	33360
14th	101·2	100	60	23440
15th	101·4	100	60	26800
16th	100·8	100	50	29040

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 17th	100	88	46	30880
19th	98·4	80	30	29280
23rd	101	120	44	27920
26th	102·4	130	38	23560
29th	102·4	104	40	16560

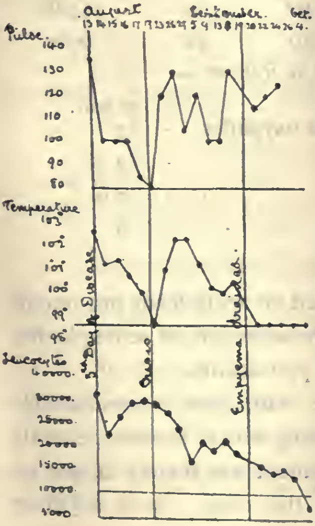
Exploring needle put into chest, no pus found.

Sept. 5th	101·4	120	40	21200
9th	100·4	100	36	19360
13th	100	100	36	21200
18th	100·4	130	46	18080

19th Chest again needled; this time pus was obtained and several ounces of it were evacuated the same evening.

20th	98·6	112	32	16560
22nd	98·6	120	40	13600
24th	98·6	126	42	15920
26th	98·6	—	—	8080

The patient was allowed to get up on October 3rd and was sent to the Jaffray convalescent home. Wound slightly discharging on Oct. 12th.



This case is very instructive. Crepitations and cavernous breathing existed until August 29th. His temperature, pulse, and respirations touched a practical normal on August 19th, after which date they again became distinctly increased. His leucocyte record, on the other hand, was maintained. It is more than likely, I think, that pus was present when the first exploratory puncture was made; the heat value, pulse respiratory rate, and leucocyte numeral seem to confirm this suspicion. After three weeks a second exploration revealed the presence of pus in the pleural cavity, and it is of interest to observe the respective curves shown on the accompanying chart during this interval. A very definite leucocytosis existed during the entire period, which was undoubtedly due to the empyema, since it rapidly disappeared within a day or two of its evacuation.

12.—W. W., æt. 54, male. Lobar pneumonia in lower lobe of right lung. Duration of illness, one day. Patient addicted to chronic alcoholism.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 31st	103·8	108	44	21840

Differential count as follows :—

	Per cent.
Polynuclear purely granular oxyphiles -	89·2
Small lymphocytes - - - -	5
Large lymphocytes - - - -	3·8
Myelocytes - - - - - -	·8
Polynuclear coarsely granular oxyphiles -	·8
Transitional cells - - - - -	·4

	Temp.	Pulse	Resp.	Leucocytes per c.m.
Aug. 1st	102·8	92	42	14320
2nd	101·8	120	42	6960

Differential count on these days as follows :—

	Per cent.
Polynuclear finely granular oxyphiles -	87
Small Lymphocytes - - - -	4·4
Large Lymphocytes - - - -	2·6
Myelocytes - - - - - -	6

Died on morning of Aug. 3rd.

Post-mortem examination revealed an acute lobar pneumonia of the right base in the stage of red hepatisation, an acute pleurisy over the inflamed area, and acute pericarditis.

This patient, a strong massive man, gave a considerable leucocytosis on the day of admission, which, however, entirely disappeared before death. The patient was acutely ill, and he could not possibly have reached the crisis. Such a falling leucocyte curve in the early days of a severe pneumonia can only have one true explanation, namely, that the vital reactionary power of the patient is being rapidly paralysed by the ever increasing and overwhelming dose of pneumonic or other toxin.

The differential counts of this case are of exceptional interest. The film taken on July 31st, was stained by eosine and methylene blue, and there was no difficulty experienced in realising that the leucocytosis was a polynuclear finely granular oxyphilic one. The great interest, however, lay in the slight myelocytæmia present, amongst 500 leucocytes counted, four myelocytes were seen.

The films taken on Aug. 2nd were stained by Ehrlich's so-called tri-acid mixture. The granules, as usual, took up the stain with great brilliance, so much so that at times I had great difficulty of making up my mind whether the more faintly stained nucleus was single or multiple. The myelocytes which have been credited to each differential count were undoubted ones, but it is quite possible despite the fact that a 1500 magnification power was used, that a much higher myelocytæmia existed.

13.—D. W., æt. 30, female. Pneumonia. Duration of illness, five days. Strong robust woman; apparently very ill.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 10th	102	144	40	9200

Differential count—250 cells counted:—

	Per cent.
Polynuclear finely granular oxyphiles -	91·4
Small lymphocytes - - - - -	4·8
Large lymphocytes - - - - -	2·2
Myelocytes - - - - - -	2·2
Transitional cells - - - - - -	·4

Patient died three hours after leucocyte count was made.

Post-mortem examination revealed the presence of a septic pneumonia.

The absence of a leucocytosis on the fifth day of such a severe pneumonia is very significant. The films of this blood were stained by Ehrlich's tri-acid mixture, and they presented the same difficulty as the Ehrlich films of the preceding case.

14.—J. G., æt. 40, male. Lobar pneumonia. Duration of illness, three days. Patient addicted to alcohol.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 24th	104	140	36	3840

Died during the night.

Post-mortem examination confirmed the diagnosis. A well-marked lobar pneumonia existed in the stage of red hepatisation. The patient was a strong healthy looking man, and the distinct leucopenia present at such a stage in the disease is of grave significance.

15.—A. H., æt. 32, female. Patient admitted delirious, with rapid breathing, fine râles in chest with pulmonary consolidation. Duration of illness, four days. Alcoholic.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 18th	102	168	54	10000

Died on the following morning.

Post-mortem examination revealed a double pneumonia with patches of old apical tuberculosis.

16.—W. W., æt. 36, male. Lobar pneumonia, duration four days. Patient very ill.

	Temp.	Pulse.	Resp.	Leucocytes. per c.m.
Nov. 3rd 11 a.m.	104	128	24	5600

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles -	86·2
Small lymphocytes - - - -	6·2
Large lymphocytes - - - -	3·4
Myelocytes - - - - - -	3·4
Polynuclear coarsely granular oxyphiles -	·6

Patient died the same evening at 11 p.m.

Post-mortem revealed a well marked apical pneumonia in the stage of grey hepatisation.

The films of this case were stained by Ehrlich's mixture, and gave the same difficulty as those of cases 12 and 13.

CONCLUSIONS.

The leucocytosis of pneumonia is due entirely to an increase of the polynuclear finely granular oxyphiles, and probably begins on the first day of the illness. If the patient's reaction is vigorous, and the dose of toxin not overwhelming, the leucocytes increase steadily day by day, reaching their maximum about the day of the crisis. In mild cases, however, the leucocyte curve may anticipate the crisis and commence to fall before that day, whereas in severe cases the leucocytic increase is maintained for several days after the crisis and then falls gradually. A mild attack of pneumonia gives rise to a mild degree of leucocytosis. A severe attack with vigorous reaction produces a high degree of leucocytosis, and a severe attack with a poor reaction produces little or no leucocytosis. In case 5 there was no leucocytic increase until the 6th day of illness, even though the pneumonia was severe and occurring in a robust man. Such an exceptional case is as well kept in mind when the question of prognosis is being considered. Of the sixteen cases upon which I made blood examinations, five proved fatal, of four of these owing to the patient's early death I was only able to make one leucocyte estimation, yet every one of these cases gave a normal or a sub-normal count. The fifth case was admitted on the second day of the disease and gave a leucocyte count of 21840 per c.m., on the following day it had fallen to 14320, and on the following day again, which was only the fourth day of the disease, to 6960; death occurred on the following morning. It is therefore probable that a falling leucocyte count, as well as an absence of leucocytosis prior to the crisis in a severe case of pneumonia, is to be regarded as a clinical phenomenon of very grave omen. On the other hand it must not be assumed that every case of pneumonia giving a definite leucocytosis will recover. The high degree of leucocytic increase signifies a vigorous reaction against a severe pneumonic attack. Such a reaction cannot be maintained indefinitely, and frequently the plucky fight ends in exhaustion and death.

The differential counts made in three of my cases of fatal pneumonia reveal this interesting fact, whereas the quantitative count of leucocytes was a normal one, there was a distinct relative increase in the proportion of polynuclear finely granular oxyphiles. Furthermore, finely granular myelocytes were present in all the films taken of these fatal cases, and for a reason already given, I think it quite possible that the exact degree of myelocytæmia has been underestimated, so that I cannot submit my results in this matter without a certain amount of reservation.

In a retarded resolution, the leucocytosis is maintained for an indefinite time after the crisis, it may be for weeks, or even months. This maintained leucocytosis of retarded resolution, though somewhat lower than the primary pneumonic increase is definite, somewhat irregular in degree, and tends to disappear gradually.

Suppuration following pneumonia is similarly accompanied by a rising leucocyte count after such has fallen to normal, or it resembles that of retarded resolution in being a continuation on a lower scale of the primary pneumonic leucocytosis. Suppuration is probably associated with more elevation of temperature than is retarded resolution. The important suggestion, however, given by a maintained leucocytosis after the crisis of a pneumonia is, that there is some complication which calls for a careful physical examination of the chest, together with a judicious use of the exploring needle. I feel very confident that regular leucocyte charts in pneumonia would reveal to the clinician the existence of otherwise unsuspected complications which very frequently come to the light when it is too late. The student does not require to work in the *post-mortem* room long before he meets with cases of undiagnosed empyema following pneumonia, many of which I think would be revealed by leucocyte estimations, thorough physical examinations and the careful introduction of an exploring syringe.

Under certain circumstances an examination of the leucocytes might be of considerable value in the differential diagnosis of pneumonia. Typhoid fever, malaria, and influenza are very liable to be confused with it in the early stages, prior to the appearance of physical signs; this specially refers to a central pneumonia. In all the above-mentioned conditions the leucocytes do not increase. The same can be said of measles and pure tuberculosis.

Of course, whilst advocating the value of leucocyte charts in pneumonia, one must not lose sight of all the well-tried physical signs and symptoms of the disease. They all have their individual value, and whatever information the leucocyte chart suggests must always be considered in conjunction with that given by the clinical methods of examination already prevalent in this country.

In conclusion, I wish to express my indebtedness to the honorary physicans of the Birmingham General Hospital for the great kindness shown to me by them, whilst pursuing these few observations.

THE TREATMENT OF ABORTION.

BY DR. FREDERICK EDGE.

As the title of this paper is wide I desire mainly to confine myself to the treatment of cases of inevitable and incomplete abortion when the placenta has formed, that is, after the third month.

We frequently experience cases where the bleeding is severe, the cervical canal narrow and contracted, easily dilatable for the second, but constricting again the minute the dilator is removed. The fœtus, and especially its head, is so far formed that it is difficult to get them away and not easy to break up the head. The woman almost bleeds to death, the cervix is lacerated and fever and cellulitis generally result.

Sometimes the removal of the uterine contents is quite simple, other times it is so difficult and unsatisfactory that the surgeon feels somehow he has not pleased himself, and that some more efficient mode of working must be discovered. On looking up the authorities we find that the opinions vary as to treatment, and some authors do not seem to grasp the difficulties and worries of the situation.

Playfair says, p. 282, vol. i, "Up to the end of the third month, when miscarriage occurs, the ovum is generally cast off *en masse*, the decidua subsequently coming away in shreds, or as an entire membrane. The abortion is then comparatively easy. From the third to the sixth month after the placenta is formed, the ammon is as a rule first ruptured by the uterine contractions, and the fœtus is expelled by itself. The placenta and membranes may then be shed as in an ordinary labour. It often happens, however, that on account of the firmness of the placental adhesions at this period, the secundines are retained for a greater or less length of time. This subjects the patient to many risks, especially those of profuse hæmorrhage, and of septicæmia.

For this reason premature termination of the pregnancy is attended by much greater danger to the mother between the third and sixth months than at an earlier or later date."

His treatment is as follows :—If the ovum be not sufficiently separated, or the os be undilated, means must be taken to control hæmorrhage until the former can be removed or expelled. Plugging the vagina with a sponge or pledget is recommended, with administration of ergot. Dilatation with sponge tents is advocated. Generally the placenta will come away in a day or two at most. If the placenta and membranes putrify then inject Condy to keep the smell down. This requires no comment nowadays when a patient must be relieved quickly and with safety.

Galabin, p. 353—"It is from the tenth and more especially from the twelfth up to about the twentieth week, that this especially close union exists between the placenta and the uterine wall, and hence an abortion within these limits of time is more likely to lead to grave results than either before or after."

He recommends a sponge tent or plugging the vagina. When offensive discharge or fever occur, the use of metallic dilators and clearing out of the uterus is advised.

Lusk, p. 317, recommends vaginal packing and dilatation of the cervix with tents in cases of incomplete abortion from fourth to seventh month.

But it is evident by the careful instructions and the renewal of the vaginal plug that this is not safe, not effective, and is a very worrying, uncertain method. When the vaginal plugs have not within 24 hours or the third time of renewal given any result, Lusk used to insert sponge tents. We need not discuss these and the dangers of sepsis involved. No doubt these authors act differently now, but I quote their older directions merely to emphasise the change in treatment which has occurred. Nowadays the tendency is to do all the operations at one sitting if possible.

The method advocated by Dührssen is as follows :—When the internal os will admit the finger, and the sac of the ovum has entered the cervical canal, it is too late to attempt to save the fœtus. The bleeding is usually so severe as to necessitate immediate local treatment. The common practice in such cases is to plug the vagina. This stops the hæmorrhage, assists the further separation of the ovum by damming up the blood and exciting contraction.

The same valuable results may be attained with still more certainty by tamponade of the utero-vaginal canal. This method consists briefly in plugging the uterus with iodoform gauze, and the vagina with wool tampons; within 24 hours as a rule the uterine contents and ovum are expelled, and of course hæmorrhage is arrested at once. The result is all the more sure the further pregnancy has advanced, that is, at those stages just when evacuation of the uterus becomes more and more difficult. It is very rarely necessary to perform a second tamponade of the uterus. It acts equally well whether the placenta alone or the placenta with the fœtus be retained. It is also useful in cases difficult of diagnosis, where free bleeding has existed for some time, when the parts of the ovum have disappeared and the cervix is closed. Under such conditions the bleeding is checked and either the uterine contents are expelled, or at any rate such dilatation of the cervix is attained that the digital exploration becomes simple. This plugging of the utero-vaginal canal renders internal accidental or concealed bleeding impossible, whereas it occurs after vaginal plugging alone.

When digital exploration is necessary the author recommends the middle finger to be used instead of the first finger. The curette is strongly prohibited, as it scrapes away uterine wall and may perforate the uterus.

Höning's manipulation or bimanual milking of the uterus is very useful in some cases.

When much blood has been lost ether is to be preferred to chloroform as the anæsthetic.

When sepsis (pyrexia) occurs, immediate dilatation with metallic dilators is to be performed and the uterus emptied. In miscarriages of the fourth and fifth months it may be necessary after separation of the placenta with the fingers, to remove the decidua vera with a curette if it is very thick, or if decomposition has set in.

The fourth to fifth month fœtus should be left to natural expulsion unless the mother is in danger or there is decomposition. The head is the troublesome part to extract. It is best broken up against the symphysis pubis.

Fritsch considers plugging of the uterus with iodoform gauze to be the best treatment in cases of decomposition of the uterine contents, and when hydatidiform mole is present.

No doubt these methods are very good, and when used under conditions suitable they are not difficult to apply and the results are certain. But most of these methods have been evolved for the treatment of a patient in lying-in institutions, with every modern hospital necessity at hand.

It has often struck me when called into the country to a late abortion (or premature labour) that it was necessary, if possible, to remove all danger at once, or rather to do everything at one sitting, as otherwise one would be liable to be called out at any hour and without notice to go back to a patient who might have lost her life in the mean time. What has always impressed me in these cases has been the undilatability of the cervix for anything more than the time whilst the dilator was in the cervix.

Dührssen and others have advised dilatation by incision up to the insertion of the vaginal wall into the cervix in cases where delivery is retarded, to an extent dangerous to the mother or child, by rigidity of the vaginal cervix. There is also a method, now much used in hospitals, of Mäurer's dilatation by elastic traction upon a kolpeurynter filled with water. This is a very good method, and may dilate the cervix very quickly when the uterus can be at once evacuated, and, if necessary, plugged with iodoform gauze, which a nurse or attendant can remove later on. Champetier de Ribes' bag may be used in such cases, but it is more for later cases.

Professor Taylor has invented an artificial ammon which may be used for dilatation of the cervix, but I have had no experience of it and should like to hear its inventor's views on its use.

Barnes's bag I have not used.

Peter Horrocks has a thin walled rubber bag tied upon a gum elastic catheter, and filled to moderate distension. He names it maieutic, which means obstetric or midwifery bag. I have no experience of it. He says it becomes rotten and bursts after being kept long.

Doléris recommends forced or quick abortion whenever it is necessary to procure abortion, and the uterus is to be emptied by forceps and curette.

Ahlfeld and also Bosse (*B. G. Journal*, May, 1901, p. 41) point out that when the kolpeurynter is used it should be filled gradually, as too sudden dilatation of the cervix is generally followed by quick re-contraction of the internal os, a trouble which, as we have seen, arises with other forms of dilatation of the cervix at these times.

As regards the evacuation of the uterus in fifth and sixth months, the views at the B. M. Ass. Congress at Cheltenham were as follows:—

Dr. Peter Horrocks (*B. M. Journal*, October 5th, 1901) says: "When the hæmorrhage is severe and repeated, it may be a question whether the mother's life may not be jeopardised by trying to save the child. Each case must, of course, be judged by a careful consideration of all the points, but speaking generally the best rule to adopt when in doubt is to empty the uterus. For in any case, the chances for the fœtus are very poor, and the mother may go on losing to such an extent that at last a fatal syncope results, or the uterus is emptied, and the patient is so weak that she succumbs to one or other of the conditions following upon excessive hæmorrhage.

Similarly, when the os uteri is dilated, and there are expulsive and frequent pains, it is better to empty the uterus either by allowing Nature to take its course or by assisting it in the best manner suitable for the particular case. For instance, rupturing the membranes is often all that is required, as this is followed by contraction of the uterus, which stops further hæmorrhage and promotes stronger expulsive pains. Where the patient is in a serious condition, or where a placenta prævia is suspected, it is better to give an anæsthetic and clear out the uterine contents aseptically with the finger. In the more advanced cases of pregnancy—five and six months—it is better to extract the child piecemeal rather than damage the uterus by lacerating the cervix in the attempt to dilate sufficiently to extract an intact fœtus; and when the fœtus is removed, it is as a rule an easy matter to reach the placenta and peel it off.

Where a miscarriage has already partially taken place, it is as a rule best to give an anæsthetic and complete it."

Haultain said Dr. Horrocks had not emphasised the amount of dilatation necessary, which in the fourth and fifth months was to the size of a crown, and then he preferred to plug the cervix and vagina and wait rather than at once remove the ovum. He dissented from Dr. Horrocks' recommendation to remove the fœtus piecemeal through an imperfectly dilated cervix.

Professor Byers preferred the curette to finger when the os was dilated; if os not dilated then he dilated with iodoform plug in cervix and plug in vagina.

I have heard that in Dublin some teachers recommend leaving the case to nature to conclude the labour. as the woman always gets over it without lacerations, but very anæmic. The old practice of giving opium to ease the pain and ergot to expel the contents of the uterus was practically the same treatment and was generally successful, but the exceptions would be very dangerous to a medical man in these days.

The preventive measures against miscarriage have been given fairly fully by Horrocks, in introducing the subject for discussion at the Cheltenham meeting, and I quote from him with some modifications.

The measures to be taken for the prevention of miscarriage are as follows:—

1. Violent exercises are to be prohibited.

2. All exposure to shocks and frights is to be avoided.

3. Operative procedures should not be undertaken unless absolutely necessary and urgent. Pessaries are not to be worn after the fourth month. Vaginal douching should be forbidden. This last point should always be remembered, as it may lead to abortion after its previous use has aided conception and helped to cure sterility. Hot sitz baths may be placed in same category.

4. Pedunculated ovarian and fibro-myomatous tumours are to be pushed into the abdominal cavity, if in the pelvis, until after labour has taken place. Uterine displacements must be rectified. Retroflexion is the most characteristic. When necessary the genu-pectoral position may be used for replacement and a pessary inserted until the end of the fourth month. Pelvic inflammations are often absorbed, or pregnancy goes on despite them. Adhesions become soft and stretch. Treatment of a general nature is used.

5. Tight stays and tight lacing should be forbidden.

6. The regular action of the bowels must be obtained, and there is no danger in using enemata if care be taken to make them mild and not too hot or cold, and they be administered gently and not too copiously.

7. General weakness, anæmia, and especially syphilis should be treated. When there has been previous miscarriage, give small doses of mercurials until child is born and weaned.

8. Endometritis, subinvolution and other genital diseases must be treated between pregnancies.

9. General diseases, fever, chorea and epilepsy, etc., must be treated on general principles, with always the object of keeping down the abdominal pressure.

10. The use of stimulants, alcohol especially, is to be avoided. Overlactation may lead to such changes in the uterus as to cause abortion, and there is a question of the influence it has in causing extra-uterine pregnancy.

Threatened abortion, which we will now consider, may be said to exist whenever there is pregnancy, upon which hæmorrhage, pain, dilatation of the cervix or descent of the ovum supervene.

When called in to such a case, after careful inquiries about the history, any *clots* should be examined in water for fringes of villi; the *cervix* should be examined for dilatation, protrusion of ovum, if patent, the uterine cavity may be entered and explored. The condition of the fundus is important, for if the fundus be globose, cystic and elastic, it is unlikely that the ovum has ruptured. If all symptoms cease for a time there may be missed abortion or moles to deal with. But there is always in these cases something to be noted, such as a discharge or sepsis, which will lead to exploration of the uterine cavity and removal of the products of conception.

Speaking of the treatment of threatened abortion, Dr. Peter Horrocks says:—

"These warnings are usually either a show of blood, or pains, or discharge, such as watery or mucoid. In all such instances it is desirable to make an examination to find out whether it is avoidable or not. If the os uteri is not patent or patulous, if the pains are few and not expulsive in character, which must be estimated by the effect upon the cervix and os uteri, there is a possibility in many cases, by keeping the patient in bed and not allowing her to do anything, not even to get out of bed for defæcation or micturition, and by administering sedatives, of which opium and its derivatives are the best, that the symptoms may pass away and the patient go on to term. By treatment on these lines it is just possible sometimes to succeed even when the os uteri is so far open that the membrane can be felt, though as a rule such condition goes on to miscarriage. In some cases ergot, viburnum prunifolium, and such-like drugs are given and may, by promoting uterine contraction, stop bleeding and so prevent miscarriage."

The rest in bed is very useful, but one need not despair always even when the patient is walking about, and should the recumbent position be retained too long, and thus lead to abdominal and pelvic congestion, the abortion may be hastened instead of being prevented.

The condition I find most often to be the predisposing cause of the abortion is constipation of the large intestine, and I find calomel with a magnesium sulphate and rhubarb mixture act very well in many cases. The general arterial tension requires lowering, and once the danger has been averted many cases will be saved by the continued use of small doses of mercury and potassium iodide.

Of the use of sedatives I have very little experience, as I find that if the bowels can be made to act quietly either by aperients or enemata, and the liver be emptied by calomel, we obtain that true rest which is the equilibrium of natural functions.

If the pains or bleeding continue or the ovum continues to come down through the os, which is dilating, the abortion should be *considered* inevitable and immediate steps taken to empty the uterus.

The surgical termination of abortion I manage as follows :—

In a *clean* case completely under control, such as an induced abortion, the procedure depends upon the stage of the pregnancy. Up to the end of the third month I at once dilate and empty the uterus, but after that period, *i.e.*, practically when I find I cannot complete the emptying of the uterus easily, I pass some iodoform gauze into the uterus and plug the vagina firmly. Uterine contraction usually sets in, and either expels the ovum or leads to such dilatation of the cervix that removal of the ovum is easy and safe.

In septic or doubtful cases I empty the uterus at once. The patient is cleaned and placed under anæsthesia. The dilatation is done by metallic dilators, which run up to size 50, French gauge, and are made specially for me by Messrs. Downs, on Sloane's pattern. Dr. Haultain says dilatation to the size of a crown-piece is necessary. The fœtus is extracted piecemeal before the placenta, unless this comes first. I use volsella in the uterine cavity to seize the fœtal head, but by no means recommend this method to any medical man unless he is constantly using volsella. Elastic pressure forceps often enable me to burst or break the head, which is the chief trouble.

The placenta is removed by the finger, by Thompson's very rectangularly curved blunt curette, or by bimanual milking pressure of the uterus as recommended by Höning. When the placental site is very prominent, and in septic cases, it is advisable to scrape it. When the uterine cavity is empty, iodoform gauze is packed into it gently and removed soon in a septic case, and later in an aseptic case.

If the cervix is very rigid and undilatable and the bleeding very profuse, I pass gauze into the uterus and plug the cervix and vagina, and await the expulsion of plugs and ovum or dilatation of the cervix when I remove the ovum. These cases are in the later (fifth and sixth) months when the cervix is like a rubber ring, for the dilator is no sooner removed than the cervix is closed again.

For the anæmia and shock which arises in bad cases the more immediate treatment consists in rectal infusion and submammary infusion. Intravenous infusion may be done in exceptionally urgent conditions.

Hypodermic injections of strychnine are very effective and may replace the use of ergot.

I shall not enter into other exceptional means used in extreme hæmorrhage such as binding the limbs, etc. I do not use tents. I do not use ergot.

Some gynæcologists have incised the cervix in several places up to the insertion of the vagina, into the cervix. This method, however, is to be used in the later months of pregnancy when the cervix does not dilate and when special urgency for delivery is present, as in eclampsia.

Finally, careful examination after thorough antisepsis will often enable the practitioner to decide whether he should wait or finish the operation immediately, and in this decision he should be guided by the consideration of his experience and manipulative capacity.

REPORTS OF CASES.

CASE OF TUMOUR OF THE SUPERIOR MAXILLA.

BY CHAS. F. FORSHAW, D.D.S.,
BALTIMORE COLLEGE OF DENTAL SURGERY,
AND HON. DENTAL SURGEON TO THE BRADFORD BOYS' ORPHANAGE,
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ETC., ETC.

MISS B. D., æt. 27, a lady of healthy appearance, came to me some twelve months ago to ask my advice as to what should be done with respect to a swelling on the left upper jaw, which was about as large as a pigeon's egg, and had first made its appearance some twelve months prior to her visit to me. The tumour gave to the face an ugly asymmetry. Its situation upon the jaw was eight lines from the alveolar margin. It was slightly lobulated, sessile, and gave to the finger a sense of gentle pulsation. Its origin could not be directly traced to the periodontal membrane lining the alveolus in connection with any of the decayed teeth. In general appearance the enlargement suggested gumma, epulis of an unusual form, or epithelioma. She had been treated with pot. iodid. without benefit, nor was there any history or symptoms pointing to a specific origin. There were no glandular enlargements at the angle of the jaw, or about the triangles of the neck. The growth appeared to spring from the labial surface of the alveolar process. Its growth had been very rapid for the last three months and was quite unaccompanied by any form of ulceration, nor was there any pain. Miss D. had worn a partial upper vulcanite denture for some years, which was displaced so much as to show some of the natural teeth in both the superior and inferior maxilla, owing to her being unable to quite close the mouth on account of the protuberance of the tumour. In January of last year the patient having been prepared, chloroform was administered by means of a Junker's inhaler, Mason's gag was inserted in the mouth, the cheek retracted, and everything in absolute readiness, Mr. Lodge, F.R.C.S., with my assistance removed the growth with one sweep of the knife. The hæmorrhage was very free; one or two vessels were picked up by catch forceps and tied. The actual cautery (the flat button) was now freely applied to the base of the ulcer so produced. This process was pushed so as to thoroughly destroy the tissues right down to the bone, some of which was gouged away and removed. The wound was plugged with iodoform gauze, and the patient allowed to recover from the anæsthetic, after having been under its influence less than a quarter of an hour. The total quantity of chloroform used was 1 drachm. In seven days the lady's face had resumed its normal appearance. She was much brighter and had even increased her weight. We also at the same time excised the edge of the scar where the alveolar process adjoined the buccal mucous membrane, which had a slightly suspicious feel of rigidity, the portion removed being about ¾ in. by ⅛ in. in breadth. I saw her again the following week, and on this occasion the healed surfaces had quite an healthy appearance.

There has been no return of the condition up to the present time, July 29th, 1902, when I last saw her. The tissue removed, on examination in the recent state, had a fibrous appearance containing numerous vessels, some of which were of large size. It presented microscopically many thin-walled blood-channels, lying in a stroma of small spindle-shaped cells, among which could be discovered a few of a myloid type, certainly suggestive of a mild sarcomatous malignancy.

REVIEWS.

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TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS.*

This book is in every sense a reference work on the subject of pharmacology and therapeutics. Such being the case, the editor and contributors have wisely placed some limit to its scope. It is in no sense a text-book of materia medica. In fact the editor distinctly states that "the natural history, source, characters and chemistry of the drugs are either entirely omitted, or only described in the case of the more important drugs as far as has seemed necessary to help to explain their action or use." Another point is that questions of a pharmacopœal nature are also omitted. The work therefore is purely confined to pharmacology and therapeutics, although it must not be supposed that there are no important references or paragraphs on the composition of important substances. The list of contributors contains the names of some of the most eminent authorities in medicine and therapeutics, not only in the British Islands, but also in America, as Professors Cash, Cushny, Amory Hare, Leech, Stockman and Tirard, and Drs. Hector Mackenzie, Sidney Martin, and Thomas Oliver, Shoemaker, and many others.

The plan followed in the book is, generally speaking, to group drugs according to their pharmacological actions. There is no doubt that such a method has much to recommend it, and from the point of view of the erudite scientist there is little, if any, objection to be raised. The practical therapeutist will sometimes enter a protest against such a system. There is a tendency to diffuseness if such a system be adhered to, and as many drugs have different actions if considered from the point of view of regional therapeutics, it is almost inevitable that the reader will suffer from the want of proportion in the knowledge acquired from a work of this character. In other words, there are two ways of studying therapeutics, the pharmacological and the clinical. Each has its own sphere, each requires a particular method of study, and the student or practitioner approaching the vast subject of treatment from either standpoint alone, will most certainly show a lack of something. On the one hand, an intimate knowledge of agents with which he is dealing may be wanting, he will at times fail to originate a possibly beneficial line of treatment. On the other hand, the clinical therapeutist may often show greater skill in the management of a definite form of disease, but his tendency will be towards empirical methods, and the range of those methods will tend to contract as he proceeds. Therefore, he who would become an accurate therapeutist, and have at the same time a sound knowledge of the treatment of disease, must combine these two methods.

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* Text-Book of Pharmacology and Therapeutics. Edited by W. Hale White, M.D., F.R.C.S. Edinburgh and London: Young J. Pentland.

Dr. Hale White's book contains in addition to the chapters on drugs some very valuable information on other important methods of treatment, such as serum therapathy, diet, mineral waters, Weir-Mitchell treatment, climate, and the open-air method of dealing with phthisis. There are also chapters on The Use of Electricity, Electrical Diagnosis, etc. There is frequently a tendency to overlapping and disproportion in a work by a variety of authors, but we can conscientiously say that the present instance is almost an exception. Subjects of wide importance, such as digitalis and cardio-vascular tonics, mercury iodine compounds, etc., are given at considerable length, while others of less importance come in for only a short description. This is no doubt due to the very able manner in which the work is edited. The subject of pharmacology and therapeutics is without doubt dry, but we can strongly recommend the advanced student or practitioner to make a careful study of Dr. Hale White's text-book, as every page abounds in valuable information. We also congratulate the publisher on the style of the work which is uniform with a "Text-Book of Medicine" recently published, and also a work of standard merit.

SAUNDERS' MEDICAL HAND ATLASES.

OPERATIVE SURGERY.*

THIS compact volume contains a concise and clearly written compendium of the principal modern surgical operations, and special attention is given to those that are more suitable for performance on the cadaver. The letter-press, wood cuts and coloured plates, with which it is profusely illustrated, are, as in all Saunders' publications, of a very high degree of excellence. Of the coloured plates in particular it may be said that they delineate the structures they are intended to represent, with wonderful accuracy, and Mr. B. Keilitz is much to be congratulated on his efforts.

This is not the first edition of this work that has been issued, and in the present one in many instances valuable foot notes have been added by the translator. To the methods of different German and foreign surgeons, notably of Kocher, Bergmann, Billroth, Bruns, Dieffenbach, Langenbeck, König, Kuster, and others, frequent reference is made. It would be more flattering, and certainly fairer to our English and American surgeons, if many operations here described, and which they have undoubtedly originated, had been attributed to them.

As an epitome of surgical operations the work is not too condensed or too concise to be easily readable; and while much time has not been spent in minutiæ, yet sufficient has been devoted to all details of practical importance.

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* Saunders' Medical Hand Atlases. Operative Surgery. Zuckerkandl. London and Philadelphia: W. B. Saunders and Company.

To criticise briefly a few points:—

Dis-articulation of the leg at the knee joint is recommended by an anterior flap, while Steven Smith's amputation is not mentioned. Carson's amputation is also omitted.

Several pages and illustrations are however devoted to most ingenious, and in some cases it would seem almost fanciful, methods of osteoplastic amputation and joint resection.

Mckulicz' resection of the foot is dealt with at some length, but we consider that the propriety of performing this operation for "melano-sarcoma" for "luxation of the hip joint" and "shortening after resections of the knee" is very questionable.

Operations on nerves, and especially on the 5th cranial nerve, are well described, with the exception that Carnochan's operation is not mentioned, and to Krause alone is given the credit of the one which is usually here attributed to Krause and Hartley combined.

Ligation of the internal iliac artery is advised by a posterior incision as if to expose the ureter.

Tapping for ascites is to be done on the left side of the abdomen.

In dealing with suture of the intestine, it is said to be unimportant whether the mucous membrane is included or not. To us it would appear most important to include it.

The various methods of gastrostomy are very fully and well described, but no mention is made of pyloroplasty, or Loreta's operation.

Finally the method of performing nephropexy can hardly be said to be up-to-date.

On the whole we can recommend this volume as a reliable addition to a student's library.

HUMAN EMBRYOLOGY AND MORPHOLOGY.*

THERE can be no doubt that there was a distinct demand for a book which covered the ground vaguely described in the syllabuses of the various examining bodies, as embryology, comparative anatomy or vertebrate morphology.

To those who intend presenting themselves for the higher examinations, this volume will be an invaluable guide on the subject. It cannot, however, be considered a text-book of embryology and morphology. It must be read after, or in conjunction with, one of the ordinary text-books, *e.g.*, Quain's Embryology. In fact, it requires some knowledge of embryology to grasp the meaning of the first sentence in the book.

The arrangement of the different chapters is distinctly peculiar, and it is difficult to understand why such an order of description should have been adopted. The first three chapters are devoted to the face, nose, pharynx and neck. Then comes a chapter on the development of the organ of hearing. Chapter v. is taken up with the development and morphology of the teeth; chapter vi. with the skin and its appendages. Having disposed of these varied subjects, the development of the ovum and that of the placenta are considered in chapter vii. and chapter viii. Chapter ix. takes up the urogenital system, and chapter x. the formation of the pelvic floor and fascia. Chapter xi. is occupied with the spinal column and back; chapter xii. with the segmentation of the body. Now comes a chapter on the cranium, and another on the structures concerned in the sense of sight. Chapter xv. takes us to the brain and spinal cord.

The remaining five chapters are concerned with the development and morphology of the circulatory, respiratory, and digestive systems, and of the body-walls and limbs.

A similar apparent want of method is noticeable in some of the individual descriptions, *e.g.*, the organ of hearing is described as being derived from five elements which are briefly enumerated at the beginning of the chapter; but, having dismissed (5) in a few words (4) is next considered in detail, then similarly (1) and after that (3) and lastly (2). All this must be a little confusing to the student who is not quite familiar with embryology. The descriptions on the whole are precise and clear, but some would be improved if given a little more fully. Some statements, moreover, require elucidation, and when such are also opposed to well-known views, some confirmatory evidence should be given to support them. Take, for instance, the description of the development of the ligamentum teres which is regarded as "a portion of the capsule of the hip joint which has been cut off by the outgrowth of the articular surface of the head of the femur." No evidence is given in support of this statement, and no mention is made of any other view on the subject.

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* Human Embryology and Morphology. By Arthur Keith, M.D., F.R.C.S. London: Edward Arnold. 1902.

The diagrams are a valuable feature of the book, and greatly simplify many intricate points.

This volume differs from, and likewise excels over, the ordinary text-books of embryology in that the practical application of the subject is brought prominently before the student. In fact the extent to which each subject is dealt with has been determined by its clinical utility. It is a book, therefore, as much for practitioners of all classes as for students of anatomy. As a text-book for examination purposes it is thoroughly reliable and amply adequate for the severest, and those who had to cull similar information from numerous volumes will envy the men who have the subject so attractively presented to them as it is in Keith's Embryology.

THE PRACTITIONER'S HANDBOOK OF DISEASES OF THE EAR AND NASO-PHARYNX.*

THIS edition is much enlarged and may be said to contain a condensed view of the present surgery of the ear, nose and naso-pharynx. So long ago as 1888 we reviewed the third edition, but we do not remember to have received the fourth and fifth editions for review, so we cannot compare the present edition with its predecessors. However, the book is nicely got up, the illustrations are good, the type is large enough, and the printing clear and easily readable.

In the chapter on adenoids, p. 275, it says, "Nearly all are agreed that general anæsthesia is as wise as it is humane;" it ought to read thus—"*Nearly all are agreed that general anæsthesia saves the surgeon trouble with the patient*, but at the risk of the patient."

Schech says with regard to the question of anæsthetics in the removal of adenoids, "The answers to these questions must be decided by the individual cases. . . . Smaller and unreasonable children who set themselves against every manipulation of the doctor, I only operate upon when under the influence of an anæsthetic." The reviewer followed out this plan before he saw Schech's book, and has seen no valid reason since why he should alter it. He has a record of over two thousand cases in which he has performed the operation without anæsthesia of any kind. Schech and others, then, who perform this operation without anæsthetics must according to this book be considered inhuman. It is not wise to infer, that all the wisdom and humanity lies on the side of those who give anæsthetics for the operation, against those who prefer to do it without. Dr. Dudley Buxton does not give his opinion on this question in his chapter on anæsthetics.

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* The Practitioner's Handbook of Diseases of the Ear and Naso-Pharynx. By H. Macnaughton Jones, M.D., M.Ch., F.R.C.S.I., and Ed., W. R. H. Stewart, F.R.C.S., Ed., William Milligan, M.D., C.M., Herbert Tilley, M.D., B.S., F.R.C.S. Eng., Ambrose Birmingham, M.D., F.R.C.S.I., F.R.U.I., and Robert Dwyer Joyce, F.R.C.S.I., M.R.C.S. Sixth edition. London: Baillère, Tindall and Company.

A MANUAL OF OPHTHALMOSCOPY.*

OPHTHALMOSCOPY is a subject generally shunned by candidates for the higher examinations. This is probably in a large measure due to the fact that hitherto there has been no book in which the subject is presented to them in a short, concise and easily comprehensible form. As set forth in this little manual the subject becomes at once attractive and pleasant to study. The first part of the book is taken up with a description of the ophthalmoscope, the different methods of examining the media of the eye and of estimating refractive errors. The student is thus prepared to localise the lesion and is ready to investigate the condition of the fundus.

A description of the normal fundus and its congenital anomalies precedes that of the diseases of the choroid retina and optic nerve. The account of the various diseases is lucid and succinct, and is so tabulated as to be easily understood and remembered by the student. The information given is sound and perfectly adequate for most purposes. Perhaps a little extension of the paragraphs on tumours of the choroid and retina, and on retrobulbar neuritis would be advantageous. The numerous drawings included in the text will prove a great aid to the student in forming a correct idea of the diseased changes, and considerably add to the usefulness of the book. We can thoroughly recommend this volume to students and practitioners as a concise, clear and reliable manual of ophthalmoscopy.

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* A Manual of Ophthalmoscopy. By J. E. Jennings, M.D. Univ. Penna. London: Rebman Limited. 1902.

THE DIAGNOSIS OF NERVOUS AND MENTAL DISEASES.*

DR. PERSHING'S treatise on the diagnosis of nervous diseases is in many respects excellent. Especially do we welcome his account of the aims and methods of examination, which is a distinct advance upon the chapters generally devoted to these subjects in text-books on nervous diseases. Whilst giving directions for a thorough and systematic investigation, he has avoided those long lists of minutiæ which are the despair of students beginning nervous work. Moreover, he has given a clinical interest and value to these directions by pointing out at each step the practical inferences which are to be deduced. Some points might be elaborated with advantage: for example, the investigation of disorders of speech, which strikes us as inadequate. We are further inclined to think that something might be gained in clearness by a little more splitting up of the text and a more liberal use of headings.

We are not sure that the second part of the book will prove of as much use to the student. It consists of a large number of tables drawn up with the object of facilitating diagnosis. These tables give evidence of the expenditure of immense care in their preparation, and they are very complete, but we should not advise their use except as adjuncts to ordinary systematic descriptions of the several diseases. We should add, however, that Dr. Pershing disclaims in his preface any other view, and expressly states that they are intended as aids only to the learning of neurology.

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* The Diagnosis of Nervous and Mental Diseases. By Howell T. Pershing, M.Sc., Professor of Nervous and Mental Diseases in the University of Denver. London: Rebman Limited. 1901.

GIBSON AND RUSSELL'S PHYSICAL DIAGNOSIS.*

We are glad to note the appearance of a third edition of Gibson and Russell's admirable handbook of physical diagnosis, published under the supervision of Dr. Francis Boyd. The advance of medical knowledge has necessitated the revision of a considerable part of the text, and new sections have been added on the examination of the blood, the gastric contents, intestinal parasites, the cranial nerves, and clinical bacteriology. For all this, however, Dr. Boyd has retained the original characteristics of the work, and the additions are distinctly in keeping with the rest. The chapter on the circulatory system is still, we think, the best part of the work, whilst that devoted to the nervous system is also admirably devised and carried out. The new edition fully maintains the previous reputation of the book and is sure to appeal to a large audience.

A TEXT-BOOK OF PHYSICS.†

Dr. Lehfeldt's excellent manual of physics has been written especially from the point of view of the medical student. That is, it deals more with the broad principles of the science than with its minute details, and these are just what the student of medicine needs and should be required to know. Some of the higher work has also been included, but a difference in the type marks off the more difficult and advanced parts, which Dr. Lehfeldt evidently considers to be beyond the actual essentials. We can recommend the book to the class of readers for whom it is intended.

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* Gibson and Russell's Physical Diagnosis. Third edition, revised and rewritten by Francis D. Boyd, M.D., F.R.C.P., Ed., Assistant Physician Edinburgh Royal Infirmary. Edinburgh and London: Young J. Pentland. 1902.

† A Text-Book of Physics. By R. A. Lehfeldt, D.Sc., Professor at the East London Technical School. London: Edward Arnold.

A POCKET CYCLOPEDIA OF MEDICINE AND SURGERY.*

THIS book is based upon the well-known Cyclopedia of Practical Medicine and Surgery of Drs. Gould and Pyle, of which it is of course a very condensed epitome, as the prefix "Pocket" necessarily suggests. The result is a very convenient volume which is crammed with information. We hardly think that the work of preparation could have been better done.

THE SOCIETY OF MEDICAL PHONOGRAPHERS.

THIS society will hold its next annual shorthand examination early in May, 1903. Two prizes will be offered, each of the value of £5, one for first-year students and one for students of more than one year's standing. The competition will be open to any registered medical student in the United Kingdom who has not taken a first prize at one of the society's previous examinations. It will be held simultaneously in London, Edinburgh, Dublin, and at any provincial medical centre in the United Kingdom at which not fewer than three candidates shall offer themselves.

Intending candidates should send in their names as early as possible to Dr. P. G. Griffith, Bonhams, Farnborough, Hants, who will furnish them in return with a detailed prospectus of the examination.

The latest date for receiving entries will be April 15th, 1903.

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* A Pocket Cyclopedia of Medicine and Surgery. Edited by George M. Gould, A.M., M.D., and Walter L. Pyle, A.M., M.D. London: Rebman, Limited. 1902.

VOYAGES D'ÉTUDES MÉDICALES.

We are requested to state that visits will this year be made to the health resorts of the Vosges and east of France, and will occupy from the 7th to the 16th of September. The party will again be under the direction of Dr. Landouzy. Return railway tickets at half price are issued to the starting point of the expedition. Particulars may be obtained from Dr. Carron de la Carrière, 2, rue Lincoln, Paris.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

Messrs. Burroughs and Wellcome send us tabloids of effervescent lithium citrate (p. 5) and sodium sulphate (p. 30). The preparation when added to water makes a very palatable draught and affords a very convenient method for the administration of a mild aperient in gouty subjects.

New Books, etc., Received.

From John Bale, Sons, and Danielsson Limited—

Some Points in Practical Surgery, suggested by the study of the Life and Work of John Hunter. By Reginald Harrison, F.R.C.S.

From the Bath Corporation—

Medical Guide to the Hot Mineral Waters of Bath.

From W. B. Saunders and Company—

Atlas and Epitome of Operative Surgery. By Otto Zuckerkandl. Second Edition, Revised and Enlarged. Edited by J. Chalmers Da Costa, M.D.

Nothnagel's Encyclopedia of Practical Medicine. Diphtheria. By WILLIAM P. NORTHRUP, M.D. Measles, Scarlatina, German Measles. By THEODOR VON JURGENSEN, M.D. Edited, with additions, by WILLIAM P. NORTHRUP, M.D. Authorised Translation from the German, under the editorial subervision of ALFRED STENGEL, M.D.

Diseases of the Nose, Pharynx and Ear. By HENRY GRADLE, M.D.

From Williams and Norgate—

Studies in Heterogenesis. By H. CHARLTON BASTIAN, M.A., M.D., F.R.S. Second Part.

From Young J. Pentland—

The Edinburgh Medical Journal. Edited by G. A. GIBSON, M.D., F.R.C.P., Ed., and ALEXIS THOMSON, M.D., F.R.C S., Ed. New Series. Vol. xi.

A Text-Book of Anatomy. Edited by D. J. CUNNINGHAM, F.R.S.

We have also to acknowledge the following—

Sixty-seventh Annual Report of the British Medical Benevolent Fund, for the year 1901.

The Half-Hitch Suture. By CHARLES P. NOBLE, M.D.

Municipal Housing; Its Economic Bases. By OWEN FLEMING.

⁂ Authors can have reprints of articles at the following rates:—

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THE

BIRMINGHAM MEDICAL REVIEW.

SEPTEMBER, 1902.

ORIGINAL COMMUNICATIONS.

A FURTHER NOTE ON ALCOHOLISM IN RELATION TO GLYCOSURIA AND DIABETES.

BY ROBERT SAUNDBY, M.D., M.SC., LL.D., F.R.C.P.,
PHYSICIAN TO THE GENERAL HOSPITAL;
AND PROFESSOR OF MEDICINE IN THE UNIVERSITY OF BIRMINGHAM.

In the course of a lecture on non-diabetic glycosuria delivered at the London Polyclinic, on March 14th, 1900 (1), I drew attention to alcoholism as a cause of glycosuria and published four illustrative cases. Since that time my impression has deepened as to the frequency with which examples of this occurrence may be met with in practice, and I believe that not a few mild cases of diabetes are merely examples of persistent glycosuria due to an undetected or unchecked habit.

The opinion that diabetes may be caused by the use of "cider, beer, and sharp wines" is to be found in Willis's *Pharmaceutice Rationalis*, published in London in 1678 (2), but he seems to have credited the morbific agency to the acidity and not to the alcohol contained in these drinks. Prout (3), too, spoke of diabetes as being due to the use of "diuretic and diluent fluids, as cider," but he did not directly attribute the condition to alcoholism.

George Harley (4) strongly advocated the influence of alcohol, and this view has found more recent supporters in Lenné (5) of Neuenahr and Williamson (6) of Manchester. Lenné tells the story of a man who came to Neuenahr to be treated for bronchial catarrh; he was fifty-three years of age and was in the habit of drinking considerable quantities of alcohol daily, his usual daily allowance being three or four bottles of white wine, or three or four litres of beer with several cognacs. As this man saw so many people getting their urines analysed for sugar he thought he would have his own examined for a joke, but was dismayed to find that it contained 4·2 per cent. of sugar. Lenné adds that the man did not consume such large quantities of drink because he was thirsty but as his way of enjoying life, and at the time the sugar was found felt himself to be in perfectly good health.

Williamson says—" In Manchester a history of alcoholism is not infrequently obtained from diabetic patients. In 100 consecutive cases of diabetes mellitus I obtained a history of very great alcoholic excess in seventeen. All the seventeen patients were males, and the form of alcohol is generally English beer, of which enormous quantities have been taken daily for long periods."

On the other hand most recent writers upon diabetes, including Dickinson, Pavy, Senator, Tyson and Von Noorden, if they refer to the question at all do so only to deny the influence of alcohol. Dickinson says (7) he has never been able to associate the disease with drink, and quotes his own paper upon the effects of alcohol read before the Royal Medical and Chirurgical Society (*Med. Chir. Trans.*, Vol. lvi.) to the effect that out of 141 cases of alcoholism not one was diabetic. He also quotes Griesinger's 295 cases of diabetes among whom there was a history of decided drunkenness in only nine, a proportion which he regards as probably no more than normal.

That immoderate beer drinking frequently causes glycosuria has been placed beyond doubt by Krehl's (8) experience among Jena students. Out of fourteen students who drank bock or export beer in the morning five had glycosuria, while only one out of nineteen showed it after evening drinking. He says there seemed to be some personal tendency influencing the result as it was not those who drank the most who showed the glycosuria. This would probably be explained by those who do not recognise the influence of alcohol as being due to the large quantity of dextrose contained in the beer, the phenomenon being what is now generally called alimentary glycosuria; but in many cases the alcohol is taken in the form of whiskey which is almost entirely free from sugar. Moreover, A. Struempell (9) has shown that heavy beer-drinkers can be readily made glycosuric by a definite dose of 110 to 150 grammes of glucose, and he attributes this to a toxic reduction of the sugar-assimilating function resulting from the abuse of alcohol, and also to the excessive introduction of carbo-hydrates in the beer. Strauss (10) has shown as a result of extensive researches that in drunkards the excretion of sugar frequently occurs not only after the administration of dextrose but also after the use of starch. He says it is characteristic of the alimentary glycosuria of alcoholics that abstinence causes it to disappear, but he holds that if they take a large quantity of carbo-hydrate food they are liable to develope true diabetes.

During the last two years I have met with several cases of alcoholic glycosuria. One of them came to the General Hospital just after I had delivered my lecture and when the subject was fresh in my mind. He was an insurance agent, aged 40, stout, unhealthy looking and flabby, with a flushed face and dilated veins over his cheeks. He complained of depression, sleeplessness and pains in the head. His hands were tremulous and his manner nervous, in fact he had all the appearance of being on the verge of delirium tremens, and he admitted that he had been drinking for the last thirteen years, and had in consequence lost a respectable position in society. As this seemed to be a case in which the urine ought to contain sugar an examination was made in the out-patient department with a positive result, and this was afterwards confirmed by Dr. Stuart MacDonald, at that time Pathologist to the hospital, who estimated the quantity to amount to 0·6 per cent. of glucose. The man was admitted to the wards where the sugar rapidly disappeared and was not seen again during his stay in the hospital. This case is very like one described in the lecture above referred to of a mining engineer aged 39, who had driven his wife away and had forfeited his social position by his drunken habits; he came to see me at the hospital on account of depression and suicidal impulses, and, as glycosuria was to be expected, I examined the urine and found that it reduced Fehling freely.

I have had a recent illustration of the ease with which such cases may be overlooked. Four years ago I saw an elderly man whose case looked suspicious; so I made enquiries through his medical attendant as to his habits, and received in reply a note from the man's wife to say that he never exceeded two glasses of whiskey a day, and that sometimes he took only a little claret. Quite recently this patient consulted me again and told me that the glycosuria had persisted, but that he had kept in pretty good health up till recently when he had not felt so well. I turned up the old notes and found this letter from his wife, which I showed to him, when he said, "I daresay that is the truth so far as she knew, but I have only been married five years and I have taken a great deal of whiskey in my time, in fact, I have always myself attributed my illness to the amount of whiskey I have drunk." The patient did not look alcoholic, and as I had no reason to doubt the correctness of his wife's statement it was purely by accident that I learned the truth.

It is only within the last few years that, having become convinced of its importance, I have looked for alcohol as a cause of glycosuria. From time to time in the course of examinations for life insurance we meet with evidence of sugar, which may be absent at subsequent examinations. Such an occurrence is, in my opinion, highly suggestive of alcoholism. A gentleman died early this year whose death was certified to be due to cardio-arterial degeneration and angina pectoris. He was 64 years of age, and had been examined by me for life insurance at the end of 1891. At that time I could find nothing wrong with him except that his urine contained a good deal of sugar. It was collected for twenty-four hours and re-examined, the amount being normal and sugar absent. On two subsequent occasions traces of sugar were found and he was then dieted for a few weeks with the result that the sugar completely disappeared and did not return after he was allowed to resume the use of potatoes and bread. He was ultimately accepted at ordinary rates, probably because the premiums were to be fully paid up in seven annual instalments. I have since been able to obtain a certain amount of evidence regarding his habits which makes it exceedingly probable that the glycosuria and the subsequent vascular degeneration were due to chronic alcoholism. I saw a man early this year, aged 45, who complained of thirst and polyuria of a fortnight's duration. He was well developed, weighing 14 stone, and there had been no loss of weight; his tongue was furred; in other respects his physical condition was normal; his urine was of sp. gr. 1028 and loaded with sugar. He told me that he was an agent for a brewery and had been in the habit of drinking a great deal of beer, but lately had reduced (!) this to six glasses of beer daily with one or two of whiskey. On making a further reduction the sugar entirely disappeared. Another man, aged 41, complained of morning sickness; his liver dulness was diminished; his urine reduced Fehling slightly and contained a trace of albumen. He admitted that he took whiskey freely; on limiting his allowance to three whiskeys daily the albumen and sugar disappeared.

In several of these cases the glycosuria was discovered not in consequence of any diabetic symptoms, but in the course of a routine examination of the urine, and perhaps it is most often under these circumstances that alcoholic glycosuria is seen. Whether such cases deserve to be called diabetes is a question to which different answers may be given. It is impossible to define diabetes in any other way than as persistent glycosuria.

The other symptoms of wasting, thirst, and polyuria are present with very varying degrees of constancy. If after abstinence from alcohol the glycosuria disappears the case may very properly be described as one of alcoholic glycosuria, but if this cannot be secured, as in several cases which have come under my observation, and the glycosuria persists, it will continue to be regarded as one of mild diabetes by the medical practitioner who has charge of it, and it will undoubtedly require to be treated by the reduction of the amount of carbo-hydrate food so long as the patient does not abstain from alcohol which is causing the reduction of his sugar-consuming capacity. In many of my cases there has been loss of weight. In one of these, mentioned in my lecture at the London Polyclinic, it amounted to 19 lbs., but that patient recovered completely after abstinence from alcohol.

In my Lectures on Renal and Urinary Diseases (page 287) I discuss the question whether glycoscuria may be met with in perfectly healthy persons, and I record a case which had long puzzled me and which I may briefly summarise here. It was a man, aged 37, a metal roller, who was examined by me for life insurance in July, 1887: he was very powerfully built and weighed 12 stone. His family history was perfectly good and I could find no evidence of disease about him except that his urine was loaded with sugar, and this was found at all subsequent examinations. I saw him again in 1895, when he weighed 12 stone 9 lbs., and I remember being struck by the falling off in his appearance; his face then showed signs of alcoholism, but I did not at the time or for long afterwards connect his glycosuria with that habit. The man is still alive and is supposed to be in good health, but I have it from his doctor that he consumes large quantities of beer, and I have no doubt now that this mysterious instance of glycosuria in a healthy person is nothing more than a case of alcoholism.

The chief practical importance of these observations is the light they throw upon the presence of sugar in the urine of otherwise healthy persons or persons who present no other symptoms of diabetes, but it would be a great mistake to lose sight of the other factors which may cause glycosuria, and I have no desire to exaggerate the frequency of the relation. Nor do I intend by quoting the passage from Williamson to imply that in my opinion 17 per cent. of all cases of diabetes are caused by alcoholism: in fact I consider alcohol may almost be disregarded as a cause of the severer cases of diabetes met with in the first half of life. It is among elderly diabetics that it plays an important part, and probably many of these cases could be cured if we were able to check the habit upon which the persistence of the glycosuria depends.

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THE ELECTRIC SERIES BATH.*

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TREATMENT by electricity and especially by the constant current often fails by reason of faulty attention to technique and especially to insufficient dosage. The current given is often paltry and utterly inadequate, and is frequently limited by the nature of the source of energy, especially if it happens to be a portable battery, which in most of its forms does not give out sufficient current.

There is also the further factor that when the ever popular tiny electrodes on handles are used, the current density is so great that a current of 15 or 20 milliamperes becomes very painful and almost unbearable, and often severe and intractable burns are produced.

Current density bears an inverse ratio to the surface of the body in contact with the electrode, and it is density, not current, that determines the painful effects. If a current flowing through an electrode of four square centimetres area produced unbearable pain of liminal intensity, then the same current flowing through an electrode of sixteen square centimetres would produce pain that could easily be borne, perhaps about half the pain that was produced in the former case. So briefly : square the area and you halve the pain. Or with a constant pain element, the current traversing the small electrode would be half that producing the same pain when the larger electrode was used. That is, to double the current you require to square the area of your electrode to cause the same pain. So that the relation is somewhat similar to Weber's law within certain limits.

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* A paper read at a meeting of the Birmingham Branch of the British Medical Association.

Diseased areas are generally large. To influence the morbid process or result the whole area should be traversed by the current. This can be done in two ways. Firstly, by applying to adjacent portions of surface a small electrode (or a roller electrode), which is moved successively over the small areas which make up the whole surface. Secondly, by applying a large electrode to the whole surface affected. In the former method the bearable current is far smaller and the duration of exposure of each sectional area much shorter, and the frequent variation of current in each segment is another painful factor that is not present in the second method. There is farther the undoubted clinical fact that large electrode and large current, with almost complete absence of pain, invariably give far better results in my hands than the labile or gliding-electrode method.

I deprecate, therefore, the labile method and the use for treatment (as distinguished from diagnosis) of the small electrode, and especially of the obsolete brass cylinders, which still find favour in some quarters; and advocate the general use of electrodes with as large a surface as possible. Large flat wire gauze or wire spring well padded electrodes should be used, and in treatment of the limbs, a local bath is an ideal electrode, adapting itself to every curvature of the surface, and the current entering the body in a fairly uniform manner over a large surface area.

By immersing the affected limb in one cell, that cell becomes the active electrode, and by immersing the other limbs in other cells, they jointly become the indifferent electrode, and a larger or smaller amount of current can be borne with ease according to the efficiency or otherwise of the cell used.

In many cases, especially where the disease is not definitely local, it is advisable to apply the current to the whole body. This is generally done by the ordinary or "shunt" bath. The patient lies immersed in a bath, with one electrode behind his shoulder and the other at his feet, and a movable electrode is sometimes used to direct the current to a particular part. In this arrangement, the greater part of the current passes through the water, while a shunt circuit passes through the patient's body, the current of which is indeterminate, estimated by different observers, as a varying fraction of the whole. Dr. Hedley puts it at ¼th, others say ⅙th, or ⅛th, or less. It varies with the bulk of the patient, the height and temperature of the water. It is thus impossible to estimate the exact current the patient is getting, and the only alternative is to use a fixed temperature and height of water, and then the readings of the galvanometer will give relative, though not absolute accuracy. The absence of absolute accuracy is no excuse for discarding a galvanometer, which should on no account be dispensed with.

The advantages of the shunt bath are:—

1. The whole body except the head comes under the influence of the current.

2. Owing to the great surfaces exposed, large currents can easily be borne.

3. The whole immersed surface receives gentle pleasant stimulation.

4. The patient is reclining in a comfortable position.

The disadvantages are:—

1. Accurate measurement is impracticable.

2. The installation is difficult in many houses. It is practically necessary to have an earthenware bath, and most houses are fitted with iron baths, so that it means a new bath. An oak tub can be used, but has disadvantages; and iron baths, however well enamelled, are not to be recommended.

If the current from the main is used, which is very advisable, the bath must be effectually insulated from earth. All these difficulties tend to deter medical men from installing them in their own chambers, and so the treatment has largely drifted into the hands of quacks, who have done it discredit.

To measure the current exactly, Gärtner proposed to insert a diaphragm to envelop the body closely and divide the bath into two parts, making two huge electrodes; but this is scarcely practicable and has not been seriously attempted.

To obviate these difficulties and at the same time provide an efficient apparatus for general electrification, I constructed more than two years ago an apparatus which I call a "Series" bath. It consists of a cell A A for each arm arranged so that the water nearly reaches the axilla. A larger cell B is for the reception of the legs, the water reaching up to within three inches of the popliteal flexure. Each of the three is drilled to receive a terminal, which is connected to a plate-electrode at the bottom. These are mounted upon a platform in such a way that the patient sits in a comfortable position with an arm in each arm bath, and both legs in the larger cell, insulated from earth. On connecting up the terminals, the current flows from the feet to the arms, or *vice versa*, and so traverses all the body, except the head, as in the shunt bath. The areas of entrance and departure of current are very large; not so large as in the shunt bath, but still large enough to enable a patient to readily bear 80 milliamperes, and the whole of the current traverses the body, and the galvanometer reading is an exact measurement of the dose he is receiving.

I find that the current is much more felt in the arms than the legs, even when the leg bath is but half filled, so that there is no need to immerse the thighs as well, which could be done if the patient stood up, and had a higher bath, though at some inconvenience; but as a matter of fact, it is not necessary.

With this apparatus 60 milliamperes is easily borne, and in many cases, 80. I have often taken 80 myself quite comfortably, and even more; but beyond this limit I am conscious of some precordial discomfort and anxiety. Some subjects will take 120 milliamperes without turning a hair. These results compare well with the shunt bath. With the latter 300 milliamperes is about the maximum, and here only ¼th, ⅙th, or ⅛th of the current goes through the patient. In the Series bath, 60, 80 or more is used, and the entire current passes through the patient.

There is one possible disadvantage. The whole immersed surfaces undergo cutaneous stimulation, but the skin of the trunk and thighs do not participate as they do in the shunt

[illegible]

[illegible]

[illegible]

A
A
B

bath. Then the sitting posture is perhaps not quite so easy as the reclining.

I have recently modified the shape of the cells and platform, and have added waste taps to the cells. The new pattern is more comfortable, but does not differ in principle.

I have, so far, had very little experience of the shunt bath, so cannot compare them, otherwise than theoretically. I have, however, just installed an ordinary porcelain shunt bath in my house (a corner of which is seen in the plate), partly with a view of making practical comparisons, partly with the idea of accommodating those patients with preconceived notions who rebel at the Series bath.

With regard to indications for its use, I may say briefly that in myalgia, neuralgia (especially sciatica), chronic rheumatic pains, I have found it of great benefit, in cases intractable to other treatment, either with Series bath alone, or combined with Radiant Energy Baths; and ordinary cases that would probably yield to drugs are often cured at one sitting, or at any rate much more rapidly than by drugs.

Paralytic affections, especially atrophic forms, yield to the Series bath much more readily than to the method of picking out motor points *seriatim*.

Hypochondriasis, neurasthenia and other pyschophysical states are sometimes cured, sometimes not, but are in all cases relieved, much more so than by any drug treatment; and in many cases, it acts as a useful substitute for a voyage, or other similar forms of moral, physical or climatic treatment, which are so often inaccessible to patients for various reasons; and since I made my original baths, other forms of cells have been made for a somewhat similar purpose; but I do not think that any secure that complete immersion of the upper limbs that is so necessary, or that correlation of immersed surface between the upper and lower limbs which gives the best results.

As to details. To determine the direction of current in general galvanization, it is best to consider the upper electrode as the active one: the vital organs coming within its zone of influence. For stimulating, give ascending, for depressing, give descending current. For local affections, the nearest limb to the affected area should have the specific polarity required given to its bath; *e.g.*, for unilateral sciatica, the affected leg only should be immersed in a well filled leg bath connected to the anode, the arms connected to the cathode. For pain about the trunk, a large pad electrode, say 14 in. by 8 in., should be applied and connected with the anode, while either the arms or the legs should be immersed in their appropriate bath and connected with the cathode. I have also administered induced current and combined current by this method with success. I have so far had no experience of the sinusoidal current.

The advantages of not being dependent upon a lay institution is obvious, and is appreciated by patients, especially those who come from a distance.

To sum up, then the advantages claimed for the Series bath:

1. It is easily installed, takes up but little room, can be taken to patients' houses.

2. It is easily managed, requires very little water to fill; very little undressing required.

3. Dosage is accurate; large effectual current well borne.

4. Practically it is a success.

As to how far the moral and how far the physical element predominates in the treatment of diseases characterised by subjective symptoms, it is not easy to speak dogmatically, but the close relation between *dose* and *therapeutic value* has impressed me very much, and convinced me that the curative influence is at any rate largely physical, which laboratory experiments upon electrotonus, currents of action, migration of ions, and similar phenomena render very probable.

THE SERO-THERAPEUTIC TREATMENT OF EPILEPSY: A CRITICISM.

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In his essay on Sero-Therapy in Epilepsy, published in the *Medical News*, March 8th and 15th, 1902, Dr. Carlo Ceni has described an entirely new line of treatment. The essay has gained the prize offered in connection with the Craig Colony for Epileptics, and has therefore won the approval of some of the leading authorities on epilepsy in America. It is further of interest in that the method is based on a particular view as to the pathology of epilepsy, and that its success, if established, must go far towards confirming that view.

Dr. Ceni first refers to certain original experiments, which consisted in the intra-albuminous injection of the serum of epileptic patients into hens' eggs. From these experiments, controlled by a series conducted with serum from normal individuals, he found that the epileptic serum had a markedly increased teratogenic power, and he concludes that this fact gives strong support to the autotoxic theory of epilepsy. Believing, therefore, that epileptic phenomena are the consequence, at least for the greater part, of toxic products circulating in the blood, Dr. Ceni resolved to investigate the effect of the injection of progressive doses of epileptic serum in the treatment of the disease, thereby introducing "into the organism a much greater quantity of these poisons than is usually found there." His essay records the results of the investigation.

Details of the technique need not be given. The method of progressive increase of dose was adopted, beginning with from 3 to 5 c.c., and increasing gradually up to from 10 to 20 c.c. in 30 or 40 days. In some cases the serum obtained from one patient was injected into another; in others the patients received injections of their own serum.

We may admit at once that some very striking results occurred in eight out of ten cases recorded. These consisted first in a marked diminution in the number of attacks, both major and minor, and in two cases in their complete disappearance. The following table summarises the facts. The numbers in the first column give the average number of attacks of all sorts per month for the two months preceding the injections. Those in the second column give the average number of attacks per month which occurred during the six months following that in which the injections were begun. The first month of the treatment is not included in either column.

		Average before injection.		Average after injection.
Case	1	103	...	5·4
,,	2	60·5	...	2·9
,,	3	42·5	...	7
,,	4	23	...	4·3
,,	5	31	...	4·3
,,	6	60	...	0
,,	8	128	...	0 (3 months)
,,	10	163	...	13·2

But at least as striking as the diminution in the number of attacks was the bodily and mental improvement which the patients manifested. Not only was there an average gain in weight of 8·2 kilogrammes in the eight successful cases, but from being in the most hopeless and degraded mental condition, the patients became bright and intelligent, orderly and sociable. Moreover, the improvement was continued after the suspension of the injections, though not in all cases quite at the same high level.

It is therefore clear that an alteration of treatment gave rise to very remarkable results in eight out of ten cases. In the remaining two no improvement was observed: indeed the patients on the whole deteriorated. Dr. Ceni concludes that the injections were responsible for the improvement, and deduces further support for the autotoxic theory of the causation of epilepsy. There seem to me, however, certain *prima facie* objections to the idea on which the treatment is based, which at any rate justify a very careful examination of the essay.

It must, I think, be admitted that the idea of alleviating or curing epilepsy by injection of epileptic serum is in itself somewhat improbable. Dr. Ceni discusses the method by which the injections may be supposed to act and approaches the question in a broad and scientific manner. He first of all dismisses the idea that they produce an immunity to the epileptic poison comparable to that obtained in some other specific diseases. He points out that an immunity sufficient to cause the absolute and lasting suspension of the fits could hardly be expected to arise from the mere injection of small doses of a poison to which the organism has already long been accustomed, and that the marked and rapid gain in nutrition is strongly against such a view. A process of "vaccination" is for similar reasons rejected. The remaining alternative, provisionally accepted by Dr. Ceni, is that the modification in nutrition is not due to any action on the cells causing them to manufacture products pernicious to bacteria and their toxins, but is rather to be accounted for by a stimulation of the general metabolism of the body. A specific action is thus not assumed; and indeed it would be difficult to accept any such action in view of the inherent improbability that epilepsy is due to any single specific poison. The good effects are put down to an assumed stimulating effect on the nutritional processes, which enables the better nourished organism to resist more effectually the poisons circulating in the blood. It is, however, somewhat difficult to understand how the injection of serum containing small quantities of harmful products with which the organism has already long been poisoned, and by which it is already depressed, could have any such stimulating and beneficial effect, though the difficulty is not necessarily insuperable and is one of theory only.

There is, as it seems to me, another possible explanation of the improvement which undoubtedly occurred in the patients undergoing the injections: namely, that these patients were suffering from symptoms of bromism, and that their improvement might be accounted for, at least to some extent, by a suspension or diminution of the bromide treatment, supposing such to have taken place. The following quotations from the reports appear to me to strongly suggest that the depraved mental and bodily condition of the patients was to some extent, at any rate, due to excessive doses of bromide.

Case 1.—The patient always sits aside, distant from her companions, silent and downcast. Her eye is grim and without expression: her face wrinkled, frowning and cyanotic. Her dilated pupils react very poorly to light. A remarkable torpor is to be seen in her motor and pscyhomotor manifestations. Her pulse is weak and slow. After the first few injections, she looked more imbecile and cyanotic than ever; the sensibility had grown more obtuse; the reflexes were weaker and the pupils more rigid. It is noticeable that this patient also suffered from a "dry erythema on a deep red ground," affecting especially the skin of the breast and abdomen, and particularly the internal parts of the thighs and the anterior parts of the legs. For this, various internal and external remedies were tried without effect. For several years she had been taking daily doses of from 8 to 10 grammes of bromide. Chloral also was administered at night.

Case 2.—The patient suffers from want of sleep. His nutrition has deteriorated, and he has grown depressed, irascible and sullen. For the past year he had been taking bromide "in large doses."

Case 3.—The state of mental confusion is constant, and pronounced loss of memory is marked. The general sensibility is obtuse; the cutaneous and tendon reflexes are weak. The pupils are commonly dilated and react feebly to light. "High doses" of bromide had been daily administered during the seven years of his treatment at the institution.

Case 4.—The condition is here that of a healthy man, and there is nothing worthy of mention regarding sensibility or general reflexes. He has taken 4 grammes only of bromide every day for the past year.

Case 5.—The intelligence has shown a remarkable and progressive decay, and at present both the psychic and motor phenomena are so defective that the patient cannot care for himself. He is completely unconscious of place and time; he remembers nothing, not even his own name; his face is cyanotic and his countenance stupid. He passes the days sitting, and the sleepless nights grumbling. He often voids urine and fæces involuntarily. His sensibility is very obtuse, and the cutaneous and tendinous reflexes are very weak. He had taken 8 grammes of bromide of potassium daily for the two years during which he had been under treatment.

Case 6.—The patient has grown very restless, disorderly and disobedient, becoming almost intolerable by reason of her spiteful and irascible temper. Her intelligence is very limited, and she does not now even know her alphabet, though the fits did not develope until she was ten years of age, and she had previously attended school. She does not pay any attention to questions and cares little for reproofs. She had for a long time been taking 6 grammes of bromide daily.

Case 7 (unsuccessful).—The patient is becoming demented, as is shown by his difficulty of expression, his lack of perception, his deficiency of association, his absolute want of affective sentiments, and his failure of memory. The pupils scarcely react to light. The reflexes are diminished, and sensibility in general is obtuse. Bromide treatment had been "continual and in high doses."

Case 8.—The patient grew restless, quick-tempered, and often revengeful. She had insomnia and anorexia, and suffered from intense cephalalgia. She exhibited a great and progressive deterioration. The tendon reflexes were, however, exaggerated. "Bromide treatment" had been kept up for two years.

Case 9 (unsuccessful).—There is here no particular suggestion of bromide poisoning, and the patient was only under treatment for a month before the injections were begun. There is no mention of bromide medication.

Case 10.—The patient's physical development is checked and her intelligence gradually grows more feeble. From being good and gentle she has become wrathful, disobedient, and spiteful. The reflexes are exaggerated. She pays little attention to what happens about her. Her dress is disordered. Bromide treatment "in very high doses" had been frequently tried during the last three years.

The reports further show that without exception the patients suffered from progressive loss of weight.

It is clear that in all these cases, with only one exception, the patients were being treated with very large quantities of bromide of potassium. In his preliminary remarks Dr. Ceni states that 10 grammes *per diem* was the habitual dose for bad cases, and I think that the "high doses" spoken of in some instances may be taken as indicating some such quantity. In the one exception, the patient took 4 grammes, or 60 grains only; but even this quantity is more than can be borne by some patients for long together. It is, I think, almost impossible for any patient to take doses amounting to 120 or 150 grains of bromide daily for long periods together without exhibiting some symptoms of bromism, and in most cases symptoms of a severe nature would inevitably be produced. These symptoms generally take the form of progressive mental enfeeblement, often accompanied by serious interference with nutrition. The patient becomes dull and listless, and often extremely irritable. He ceases to interest himself in things going on about him, and his memory and intelligence fail, sensibility becomes dull, and the reflexes diminish in intensity. In the worst cases his condition is one of almost complete dementia, and he may even become dirty in his habits.

The following description given by Dr. Spratling of the condition in which many patients arrive at the Craig Colony for Epileptics may be compared with those quoted above*:—

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* Letchworth's *Care and Treatment of Epileptics*, p. 118.

"Many come here in a condition of what we call bromism. They are stupid, dull, and seem bordering on dementia. They have no energy for work, and are perfectly listless. They are suffering in many ways from the liberal doses of bromide, and the skin is highly inflamed. . . . Among the first things we do with them is to wean them from the use of bromide."

The following case, also recorded by Dr. Spratling §, shows that results entirely comparable with those obtained by the serum treatment may be arrived at by the mere omission of the bromide, when this has been used in excess, coupled of course with intelligent general treatment and judicious control:—The patient was a man, 28 years of age, who had been subject to fits since his eighth year. He had been discharged from two hospitals as incurable, and was described as "perfectly demented." On admission, "his physical condition was so low that he could not walk without support." He was described as a locksmith by trade, but "he did not appear to know a lock from a stone." He had been taking 140 grains of bromide a day. This quantity was at once reduced to 15 grains night and morning, and the morning dose was subsequently omitted. During the first month he had 180 seizures; the second, 113; the third, 3; the fourth, 1. After that, down to the time of his discharge, he did not have a single attack, nor has he had one since. He gained 16 lbs. in weight, became intelligent, and finally had full charge of the Colony printing office. This result is at least equal to the best of the serum cases, and was apparently due mainly to the omission of a drug which was causing serious mental and bodily harm; though there was here also the change in surroundings and discipline which is alone so effective in the treatment of epilepsy.

Whether or no the mental condition of the patients experimented on was entirely due to the excessive use of bromide, there can be but little doubt that the drug was to some extent responsible for its causation. It remains to be seen to what degree the treatment underwent alteration in this respect.

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§ *Ibid*, p. 119.

In all except two cases, as far as can be ascertained, the dose of bromide was gradually reduced. In the two exceptions, it was entirely and abruptly omitted with the beginning of the injections. The facts, as far as they are stated, are as follows:—

Case 1.—The injections were begun in September, and by the beginning of November the bromide had been reduced from the original dose of from 8 to 10 grammes to 4 grammes daily. Dr. Ceni remarks that, "though we had stopped by degrees, all the symptomatic drugs she had been taking so long, the patient passed quickly into a state of physical well-being that surpassed all our hopes." The erythema, which had previously been so obstinate in its resistance to treatment, and which is at any rate suggestive of a bromide rash, rapidly disappeared. In December the dose was still further reduced to 3 grammes.

Case 2.—The injections were begun early in September, and at the beginning of October the bromide, previously taken in large doses, was entirely suspended. "The patient soon passes into a state of unusual state of well-being. He sleeps quietly all night."

Case 3.—No mention is here made of the suspension of the bromide treatment. The patient "presents a remarkable rousing from the state of general torpor and mental confusion in which he has been for several years."

Case 4.—The injections were begun in November, but the bromide was not diminished from the previous quantity of 4 grammes till January. This case affords the strongest evidence against the view that I have proposed, as no attacks at all were observed in the month of December. Moreover, the dose of bromide taken was not very excessive, and the patient did not present the usual symptoms of poisoning.

Case 5.—The injections were begun on February 15th. In April the bromide was reduced to 2 grammes, having originally amounted to 10 grammes *per diem*. It is not clear from the report whether the reduction was effected gradually or abruptly.

Case 6.—The injections were begun in March, and by June the bromide, which had been gradually reduced, was now omitted altogether.

Case 8.—The bromide treatment was entirely suspended simultaneously with the beginning of the injections.

Case 10.—The bromide was again suspended at once.

The two unsuccessful cases afford some further support to the idea that the diminution of the bromide played at least some part in producing the improvement which is attributed entirely to the injections. In case 7, in which no benefit resulted, it is expressly stated that "the bromide treatment, on account of the extraordinary severity of the case, was continued." In case 9, the patient had only been in the institution a month before the injections were commenced, and no mention is made of any drug treatment or of its suspension.

The chief difficulty in accepting the view suggested lies in the improvement which in some cases appears to have taken place before the dose of bromide was reduced. This is stated definitely in two cases, and the reports are indefinite on the point in some of the others. At the same time it must be remembered that the injections usually gave rise to considerable constitutional disturbance, though this appears not to have been the case in case 4; and that epileptic attacks are well known to be liable to arrest by such constitutional conditions. Again, anything in the shape of an operation appears to be often followed by temporary improvement, and it is just possible that repeated hypodermic injections may have some effect in this way. In any case, it is clear that some part of the results claimed for these injections are open to objection on the ground which I have suggested, and that in any future trial to which the treatment may be subjected, this source of fallacy should be eliminated. Either the bromide should be stopped for some time before the beginning of the injections, or it should be continued uninterruptedly during the course of the experiment. If under these circumstances successful results are still obtained, Dr. Ceni's experiments will prove to be one of the most valuable of recent additions to our knowledge of the causation of epilepsy and the means by which it may be treated.

NOTE ON ÆTIOLOGY IN ITS RELATION TO DISEASE.

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THE following remarks are a protest against the loose manner in which the word "cause" is frequently used in relation to disease.

John Stuart Mill stated the law of universal causation as follows: "For every event there exists some combination of objects or events, some given concurrence of circumstances, positive and negative, the occurrence of which is always followed by that phenomenon." Now, scientifically, it is perfectly evident that when an event is always preceded by a particular combination of phenomena, that whole combination of phenomena must be regarded as the cause of the event in question. It is rare, however, for this "invariable sequence" to exist between a single consequent and a single antecedent, but it is generally between a consequent and the sum of a set of antecedents—each one of which is a necessary factor in the cause. In the latter case, therefore, it is clear that it is illogical to single out one of these necessary factors in the cause and dignify it by the name of "the cause." Yet this is what is continually being done, and leads to so many controversies between medical men. Suppose a man going home drunk at night falls into a pond, and one man says that the cause of his falling into the pond was his being drunk. It would seem ludicrous to everybody for another man to contradict the first, and say that the cause was that his way home led him close to the pond; and equally futile for another to say with equal heat that the cause was that the pond had not got a railing around it—each of these individuals taking a factor in the causation and calling it *the* cause.

Yet this very mistake is frequently made and to some extent is allowable in ordinary conversation, both for the sake of brevity and also for the reason that when asked for the cause of an event one may safely assume that the questioner is well aware of certain of the factors of the cause. To take an example:— A man shoots himself because he fails in an examination. Now, when asked the question "why did he shoot himself?" one naturally may say "because he got ploughed in an examination." But on closer consideration it becomes clear that the failure to pass the examination is only one factor in the cause. Other factors in this case are the mental condition of the unfortunate man, the bodily condition, and many other factors that made him choose a bullet instead of a rope or a drug. Yet the answer "because he failed in an examination" is sufficient. The questioner gathers some of the other factors of the cause from it, and others he does not care about.

But on the other hand, when dealing with the causes of diseases, it is necessary to be exceedingly cautious in adopting a license that may well be allowed to popular conversation, and it is the want of this caution that leads to those ludicrous debates in our medical societies as to whether a particular germ is the cause of a disease, or whether it is to be found in a particular bodily state; whether the aggregation of many persons in a small space is the cause of an infectious outbreak, or whether the cause is the bad drainage of the locality. In many cases it would be no more ludicrous to hold a meeting to decide whether the presence of the acorn or the presence of the soil round it was the cause of the growth of the oak—not to mention the controversies that might be raised about the absence of a grub in the acorn, or an excavating pig.

The importance of the proper appreciation of the cause of a disease becomes evident when we consider the rational method of treatment. It is generally accepted that in treating or preventing a malady our endeavours should be in the first place to remove the cause. When we realise that the cause consists of several factors, it becomes obvious that we must remove one or more of the factors; so that if we find in a particular case that we cannot remove a particular factor, we should then direct our attention to each of the other factors in turn, and we may at length find one of them that we can remove. This method may be exemplified in the case of phthisis. For some years the presence of the tubercle bacillus has been the factor in the cause of the disease that has occupied the attention of the profession generally, and the hope has been that some method of destroying the bacillus in the tissues would be found, so that in this way this factor in the cause might be destroyed, and so the disease cured. This hope, however, has at present not been realised, so we are turning our attention to the other factors in the cause, to try and find one that is more readily dealt with; and hitherto the only result we have got is that cases of phthisis treated in the fresh air, and especially in the fresh air of particular places, are much benefited sometimes. It is to be hoped that soon the other factors in the cause of phthisis will be more clearly defined: when that is the case there will be a greater chance of being able to deal more satisfactorily with the disease.

I might instance many other diseases in the same way. The serum treatment of diphtheria and other diseases is an attempt to remove one of the negative factors of the cause of the disease. This requires explanation. A boy may rob an orchard; but if the owner puts a savage dog or a policeman to guard the orchard the boy is unable to act; so that the absence of the policeman or savage dog may be regarded as a negative factor in the cause of the robbing the orchard. In exactly the same way the toxic substances of diphtheria are able to act in the absence of anti-toxic serum, so that the absence of the anti-toxin may be regarded as a negative factor in the cause of diphtheria and similar diseases. So that the introduction of the serum is the removal of the negative factor.

The bodily constitution is sometimes stated to be a factor in the cause of a disease. I would rather say that one or more peculiarities of the bodily constitution of certain people are factors in the cause of diseases. And what these peculiarities are it would be of great advantage in all probability to know, for until we know the factors of the cause we want to destroy, we can only make blind shots in the hope of hitting one of them.

THE TWENTIETH GERMAN CONGRESS OF INTERNAL MEDICINE.

HELD AT WEISBADEN, APRIL 15TH–18TH, 1902.

THE DIAGNOSIS AND TREATMENT OF ULCER OF THE STOMACH.

Professor Ewald of Berlin said he could not admit van Ijzeren's suggestion that ulcer of the stomach is due to spasm of the pylorus, as in most cases spasm was absent, while it often occurred without producing ulcer. He had seen 1,080 cases during the last ten years, his results according, as to sex, age and mortality, with the general opinion. He used a stomach tube as an aid to diagnosis, but not where he had no doubt, except in the presence of profuse hæmorrhage, where he used irrigation of iced water, but then the introduction of the tube was with a curative object. He had been struck with the number of cases which did not present excessive acidity. Of his cases, 34·1 per cent. showed excessive acidity, 56·8 per cent. normal acidity, and 9 per cent. diminished acidity. In all cases lactic acid was absent. Many patients vomited blood, and the differential diagnostic value of this symptom is very great, but it is necessary to be quite sure that the blood comes from the stomach. He suggested as causes of error: vicarious hæmorrhage, septic hæmorrhage, and parenchymatous hæmorrhage. We are no better off than we were twenty years ago in our means of localising the ulcer. The differential diagnosis must take account of (1) pyloric spasm, (2) muscular hypertrophy or a cicatricial tumour, (3) cancer. The pain of ulcer has nothing characteristic about it: it resemble gastralgia from other causes. As a cause of such pain he calls attention to hernias of the linea alba. Wasting and cachexia are relatively rare; enlargement of lymphatic glands has only a secondary value; the state of the tongue has more importance, as in ulcer it is generally moist, red, and slightly coated or clean. Perforation is generally easy to recognise, but may be simulated by perforation of the appendix. Hour-glass stomach may be recognised by distension with gas, and help may be derived by distending the stomach with an india-rubber ball, shaped like the stomach. Adhesions to neighbouring organs are very difficult to recognise, but may be suspected when the pain is always localised, and vomiting is constant without dilatation of the stomach. In duodenal ulcer the gastric juice is normal; in biliary colic there are reflex neuralgias around the thorax and shoulders.

In the course of experiments upon the cicatrisation of wounds of the stomach Schmidt has been able to assure himself that in a healthy stomach losses of substance, even when extensive, are rapidly covered over by folds of the mucous membrane, in consequence of the contraction of the muscular coat which has for effect to shield the wound from the action of the gastric juice. If this muscular contraction is in any way prevented the superficial lesions become transformed into large wounds and their healing is distinctly retarded; it is therefore probable that deficient contractility of the muscular wall of the stomach plays an important part in the causation of gastric ulcer, and this explains why such ulcers are situated especially in the neighbourhood of the pylorus and of the lesser curvature, as in these positions the mucous membrane is very slightly folded and scarcely movable. It also explains the part played by anæmia which is one of the most frequent causes of gastric ulcer, for anæmia is often accompanied by diminished contractility or atony of the stomach, and Schmidt points out that there may be atony without hindrance of the passage of food from the stomach into the intestine. Schmidt believes that atony of the stomach plays in the production of gastric ulcer a part intermediate between anæmia and hyperacidity.

Professor Fleiner of Heidelberg spoke only of treatment. He emphasised the need for repose both of the body and of the stomach, the inducing contraction of the stomach walls by washing with alkaline solution, and of the application of bismuth to the ulcer. As the stomach is most contracted when the patient feels hungry he would treat the case by hunger, and prolong the treatment as long as possible. Hunger and thirst should be calmed by enemata. If in spite of this treatment the stomach does not contract, application of the ice bag is indicated. After an undetermined interval the patient is allowed strict milk diet, which must be observed for at least a month; at the end of this time the patient may get up and eat a little white meat. Finally, six weeks after the commencement of the treatment red meat may be allowed. During convalescence no food may be permitted which causes fermentation, and he recommends neither albumoses nor extracts of meat. As all travelling must be forbidden, he never sends his patient to a mineral water station. He claims that three-fourths of the cases are cured by this treatment, and that where failure occurs it is generally due to impatience on the part of the patient or the doctor, leading to the treatment being given up too soon. But it may also fail in old callous cancers, from individual peculiarities, from gastroptosis, or from the habit of swallowing air. In old-standing ulcers the stomach must be washed out by giving alkaline water to drink, or where this does not suffice, by means of the stomach tube. The tube is only dangerous after hæmorrhage, but the quantity of water introduced should not exceed 200-250 grammes (half-a-pint), and the pressure should be very low. Nitrate of silver has appeared to diminish the pain, but he particularly recommends the local use of sub-nitrate of bismuth 10-20 grammes (150-300 grains) suspended in half-a-pint of water according to Kussmaul's plan. He claims that he has never lost a patient, and he attributes this to the fact that he has been able to recognise the point at which it was necessary to call in surgical aid. The indication is when there is loss of weight, due to the pylorus no longer permitting sufficient nourishment to pass. The presence of an ulcer is not by itself a justification for operating unless it is situated at the pylorus; in the latter case the situation is revealed by pyloric cramps, and where these are present a spontaneous cure cannot be looked for. His results have been very good; on the other hand he does not speak with the same confidence of operations for the removal of adhesions or for hæmorrhage. Where perforation occurs, immediate surgical intervention is necessary.

Professor Leo of Bonn protested against the abuse of the stomach tube, which should be used with great prudence, and only when it is indispensable for diagnosis or where there is stagnation of food, but he had obtained good results with nitrate of silver. Dr. Pariser of Homburg recommended a mixture of chalk and talc in equal parts, as a substitute for bismuth. He would keep all cases in bed until cured, the cure being recognisable by the disappearance of the painful dorsal spot.

Dr. Minkowski of Cologne referred to biliary calculi and aneurysms as un-named causes of hæmorrhage. He thought parenchymatous hæmorrhage rare, but had seen it in a case of waxy degeneration of the stomach. He used bismuth in small doses (2-3 grammes) rather than in the large doses suggested by Fleiner. He considered injection of atropine more useful against the pain than morphine.

Dr. Sahli of Berne spoke against surgical treatment and in favour of a prolonged medical cure with rest in bed, and exclusive milk diet.

Dr. Strauss of Berlin alluded to the value of discovering secondary growths in the diagnosis of cancer.

Dr. L. von Schrotter of Vienna did not believe in vicarious hæmorrhage as he had never observed it, but attached great importance to the enlargement of the sub-clavicular gland. He recommended radiographic examination after the ingestion of bismuth.

Dr. Agéron of Hamburg said that he had seen spasm disappear after ingestion of oil.

Dr. Rumpel of Hamburg said that he had performed 28 gastro-enterostomies for ulcer. Of these three died from the effects of the operation; of the 25 others, in 16 he had been able to get information as to the result. Four were completely cured; six were in good health, and had no trouble if they were careful; four were fairly well but had to follow a particular diet, and two have not derived benefit.

Professor von Mering of Halle gave the result of some experiments to determine the value of nutritive enemata. He found that of 81 grammes of albumen, 12 were absorbed, of 74 grammes of fat 4 were absorbed, while of hydro-carbons two-thirds were absorbed. He therefore concludes that the nutritive value of enemata is very small.

Dr. Lenhartz of Hamburg prescribed large doses of white of egg the second or third day after hæmatemesis; he also gave one or two grammes of bismuth three or four times a day. He disapproved of surgical intervention.

Professor Ewald agreed that an operation should always be regarded as a last resource.

Professor Fleiner regarded pyloric spasm as indicating gastro-enterostomy, not *per se* but by reason of the gravity of the morbid condition which it revealed. He did not consider hæmorrhage as sufficient by itself to justify surgical interference. In his own practice he prescribed as nourishment, milk in very small quantities at a time (teaspoonsful).

MEDICAL ABSTRACTS.

REPORT ON URINARY AND RENAL DISEASES.

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DIABETES.

Blum. *Supra-renal Diabetes.*—20th German Congress of Medicine.—*La Semaine Médicale*, 1902, p. 148.

Blum claims to have discovered in supra-renal capsules a substance which when introduced into the circulation is capable of causing glycosuria and increasing the blood pressure. Dogs fed exclusively on meat excreted under its influence 4 per cent. of sugar. This glycosuria lasts one to two days, but persists longer if the injections are repeated. In his opinion this substance acts on the liver, as dogs in a state of inanition, that is to say where we may suppose that the liver glycogen has disappeared, presented only a very slight glycosuria or none at all; but it should be added that the elimination of sugar increased when fat was added to their food. He therefore believes that the supra-renal capsules play an important part in the causation of certain cases of diabetes, especially of bronzed diabetes. He considers that the supra-renal capsules have anti-toxic functions analogous to those of the thyroid body.

Hoppe-Seyler. *Temporary Glycosuria.*—20th German Congress of Medicine.—*La Semaine Médicale*, 1902, p. 148.

Hoppe-Seyler contends that temporary glycosuria is not always masked diabetes. He has observed eleven cases of a variety of glycosuria which he calls the "glycosuria of vagabonds." The amount of sugar never exceeds 1 per cent.; it lasts from one to three days and does not return even under the influence of food rich in hydrocarbons. He believes that this glycosuria occurs in individuals who have undergone privations, and that it is due to the fact that the organs which regulate the formation of sugar, being in a state of inanition, become insufficient. He adds that alcoholism does not appear to him to have any influence in producing this glycosuria.

Vogt. *Phlorizin Glycosuria.*—20th German Congress of Medicine.—*La Semaine Médicale*, 1902, p. 149.

Vogt maintains that his researches have proved that phlorizin acts upon the kidneys. Animals whose blood contains a large proportion of glucose resulting from regular intravenous injections of this substance, excrete more sugar after the administration of phlorizin. He has repeated the experiment with cane sugar and has observed a similar increase in its excretion without any elimination of glucose. Phlorizin also influences the excretion of water and of salts; it causes diuresis with alteration of the freezing point of the urine.

Kuhn. *The relations between Diabetes Insipidus and Diabetes Mellitus.—Muench. med. Wochensch.*, Jan. 21st, 1902. *La Semaine Médicale*, 1902, p. 152.

Physiologists have shown that a connection exists between diabetes insipidus and diabetes mellitus, and in a considerable number of cases diabetes mellitus has become simple polyuria. The converse transformation is very rare: the author has been able to find only three cases exclusive of his own. The example given by him was a woman aged 58, who in 1899 had had part of a rib removed for empyema, and a year later the left breast removed for cancer. During neither period of her stay in hospital was anything abnormal noticed in the urine, but at the beginning of last year the patient sought re-admission on account of great thirst. The quantity of urine in twenty-four hours varied between 5 and 7 litres (7½–10½ pints) of sp. gr. 1002–1004; it was free from sugar. The case was diagnosed as diabetes insipidus and antipyrine was prescribed, without however doing very much good. At the end of a month the woman left the hospital, but as she continued to get worse she was obliged to return at the end of three weeks; but even then no sugar was found in the urine, although indican in small quantities was observed. Soon after the temperature rose to 39, while the urine fell to 4½ litres of sp. gr. 1011, and contained 1·8 per cent. of sugar. The patient became apathetic and somnolent; she grew rapidly weaker, and finally died, having lost more than 11 lbs. in the course of a month. At the autopsy he found a cancerous degeneration of the scar in the left breast, with secondary deposits in the lymphatic glands, especially in the neighbourhood of the solar plexus, in the right supra-renal capsule, in both kidneys, and in the liver. In addition the pancreas was atrophied.

Faulds, A. G. *Eucalyptus in the Treatment of Diabetes.—Glasgow Medical Journal*, May, 1902.

New remedies for diabetes are not uncommon: but none of them has so far stood the test of experience. Nevertheless the suggestion which we owe to the late Mr. James Dick, the Glasgow millionaire, and to Mr. A. G. Faulds of the Glasgow Infirmary, is one which should be tried by those who have opportunities of treating diabetic patients. The origin of the suggestion as told by Mr. Faulds is that some years ago Mr. Dick was travelling in New Zealand, and knowing that an old schoolmate of his was in the country, he determined to hunt him up. After considerable journeying he found his old friend, and a most agreeable interview followed. During this meeting the settler complained that his health had failed some years after he had settled in New Zealand, and that the doctors had treated him for diabetes, with but little effect. One day, however, having contracted a horrible cold or influenza, a neighbouring old native lady informed him that if he went to a certain eucalyptus tree and gathered some of the fresh leaves, and partook of an infusion of them twice or three times daily, it would cure his influenza. The patient acted upon this advice at the earliest opportunity. He made an infusion of the fresh leaves, and took a small tea-cupful night and morning, with the result that it not only cured his influenza, but caused his diabetes also to vanish with all its symptoms. Mr. Faulds has endeavoured to test this remedy in the following manner. He obtained some of the dried leaves of eucalyptus globulus of which an infusion was made in a teapot by taking one tablespoonful of the broken leaves, about 60 grains in weight, and adding 6 ozs. of water allowing it to infuse for half-an-hour, and then adding a little saccharin. This quantity was given twice daily and the remedy has been tried upon 46 cases, in 15 of which Mr. Faulds reports total disappearance of the disease and so far as can yet be judged a complete cure. The substitution of eucalyptus oil and eucalyptol was followed by no effect at all upon the sugar, and Mr. Faulds is unable to indicate to what constituent in the chemical composition of the infusion the therapeutic effect is due.

Karl Grube. *Ueber den Einfluss des Fettes auf die Aceton- und Sauere-ausscheidung beim Diabetiker.—Zeitschrift fur diaetetische und physikalische Therapie*, 1902-1903. Band VI. Heft 2.

The recent work of Geelmuyden, Waldvogel, Schwarz and Hagenberg have tended to prove that the older view that acetone is derived from albumen is incorrect and that the source may be very probably looked for in fat. Grube has endeavoured to test this clinically in cases of diabetes which showed acetonuria and gives notes of seven cases in which the amount of acetone in the urine rose and fell with the quantity of butter or cream in the diet. It is important to notice that the fat of ham or bacon did not have the same effect; he therefore recommends that in view of the probable relation of β-oxybutyric acid to diabetic coma it is desirable to limit the amount of butter and cream allowed to diabetic patients whose urine contains acetone, and to replace such fatty matter by the fat of ham or bacon.

Lépine and Boulud. *Sur les Leucomaïnes diabétogènes.—La Semaine Médicale*, 1902. No. 24, p. 197.

According to these authors the injection of thirty grammes of blood from an asphyxiated dog causes glycosuria in a rabbit which may last many days, but if before asphyxiating the dog the pancreatic nerves have been faradised this result does not follow. The extract of dog's blood obtained some hours after excision of the pancreas is strongly diabetogenic, but not if the central end of the sciatic nerve has been faradised when the pancreas was excised. The extract of blood from several cases of pneumonia has proved to be diabetogenic, but that from a case of uræmia was not. The diabetogenic substance exists in the serum and not in the red corpuscles; as the authors have already stated it is crystalisable.

Rispal. *Diabetes in its Relations with Atrophic Cirrhosis.—La Semaine Médicale*, 1902, No. 16, p. 130.

At the sixth French Congress of Medicine, Rispal referred to a case of alcoholic diabetes complicated by atrophic cirrhosis, and another case in which true diabetes supervened upon the alcoholic atrophic cirrhosis. He thinks that the second form must be very rare, and that as a rule the diabetes produces the cirrhosis. Both conditions are undoubtedly the result of the action of alcohol upon the liver.

R. Lépine. *Upon the existence of Diabetogenic Leucomaines.—La Semaine Médicale*, 1902, No. 16, p. 130.

At the same Congress Lépine announced that while injection of the alcoholic extract, dissolved in water, of 5 grammes of blood taken from a normal dog produces only temporary glycosuria, the same quantity of extract of the blood of a dog deprived of its pancreas, causes a glycosuria which lasts several days.

Guglielmo Ruini. *Clinical Detection and Estimation of Dextrose in Urine by means of O-Nitrophenylpropiolic Acid.—Gazzetta chim. ital.*, 1901. 31, ii, 445-451.

According to the author's results, the best solution of o-nitrophenylpropiolic acid for the detection of dextrose in urine is prepared by dissolving 0·3 gramme of the acid in 100 grammes of quite cold 6 per cent. sodium hydroxide solution; this scarcely alters when kept. The urine is boiled for a short time with the solution, and immediately after cooling the liquid is mixed with chloroform to which the indigotin formed imparts a more or less intense violet coloration. The reaction is more striking if the urine is previously clarified by means of neutral lead acetate solution, but this cannot be done if hydrogen sulphide or any other sulphide is present. The reaction is not affected by albumen, hemi-albumose, peptones, uric or hippuric acid, the pigments or by various salts, among which are the hyposulphites found in the urine of the dog. Some substances, however, which are not definitely determined, but which probably include creatinine and glycuronic acid, give the indigo reaction, but only when so much as 30 drops of the urine are employed for the test; these compounds are only partially thrown down by the addition of lead acetate but they are completely precipitated by mercury salts. In such cases the author has found it useful to compare the reactions of the urine before and after removing the dextrose by fermentation with pure beer yeast. Bearing in mind these considerations, the indigo reaction gives a sufficiently accurate measure of the sugar in urines, especially in those slightly diabetic. The estimation is made by determining the volume of the urine (in drops) necessary to give a violet coloration to the chloroform, and comparing the results obtained with urines containing known proportions of dextrose (0·2-5 grammes per 100 c.c); if much sugar is present, the urine must be suitably diluted before applying the test.

A few urines have been examined after ingestion by the patient of various drugs, but in no case has any influence on the indigo reaction been detected.

MISCELLANEOUS.

Rosenfeld, G. *The Differential Diagnosis of Pus from the Kidney and Bladder.—La Semaine Médicale*, 1902. No. 13, p. 103.

Rosenfeld lays stress on three points : (1) the reaction of the urine ; (2) the form of the red and white corpuscles formed in it ; and (3) the proportion existing between the quantities of albumen and pus present. With regard to the first the urine is always acid in pyelitis, but it is not invariably alkaline in cystitis ; alkaline urine permits us to exclude the hypothesis of a pure pyelitis not complicated by cystitis. Respecting the second point, leucocytes and erythrocytes from the bladder are less deformed than those from the kidney. When derived from the kidney the leucocytes are irregularly crenelated and the red corpuscles have lost part or all of their hæmoglobin.

The last is the most important, as in cystitis the amount of albumen never exceeds 0·1 to 0·15 per cent., while in pyelitis it may reach 0·3 per cent. Even where there is free suppuration in the bladder the amount of albumen is low compared to that which accompanies an equal quantity of pus from the kidney.

Mitchell Stevens. *Case of Total Suppression of Urine due to the Obstruction of both Ureters by Renal Calculi.—British Medical Journal*, 1902. Vol. I., p. 708.

The case recorded is interesting because the symptoms had all along pointed to disease of the right kidney, while the final and fatal blocking occurred in the left kidney. There were no symptoms of renal colic. The suppression of urine was complete, yet there were no symptoms of uræmia, and life was continued for seven days after the onset of complete suppression.

The author considers the case supports the view that uræmia depends upon interference with other functions of the kidney rather than that of the secretion of urine, a view already put forward by Dr. Bradford.

Beddard and Pembrey. *Hay's Reaction for Bile Salts.—British Medical Journal*, 1902. Vol. I., p. 702.

The authors draw attention to the test which has lately attracted the notice of several continental workers (*v. B.M.R.* 1901, Vol. I., p. 168), but does not seem to have gained the confidence of British observers. Possibly this may be due to neglect; at any rate Beddard and Pembrey regard it as very delicate and certain, while nothing could be more simple in its application.

The simplest method of carrying out the test is to place the urine in a test tube with a diameter of about one inch, and to throw some sublimed or finely powdered sulphur upon it. If any begins at once to fall in the urine there is at least one part of bile salts per 10,000. If none falls at once, then, after waiting one minute, the test tube is given a very gentle shake; if sulphur now begins to fall, there is at least one part of bile salts per 40,000, and so on for further dilutions.

Few precautions are necessary. The urine must be free from air bubbles, it must be clear, and, if necessary to clear it, this must be done by filtration and not by heat; for all specimens of urine at the temperature of the body give the reaction at the end of one minute, owing to the effect that heat has in lowering the surface tension of the fluid. Therefore in every case before the test is applied the urine must be cooled to about 17°C. The reaction of the urine and its specific gravity do not in any way affect the accuracy or delicacy of the test.

By its means they were able to detect the presence of bile salts when bile pigments were not present, or had disappeared, and in cases where there had been no jaundice, as in backward pressure from cardiac and pulmonary disease, and in cases of cirrhosis of the liver.

EPILEPSY.

BY JAMES W. RUSSELL, M.A., M.D., M.R.C.P.,

ETIOLOGY AND EFFECT OF INTERCURRENT DISEASES.

New York Academy of Medicine, December 17th, 1901. (*Medical News*, January 11th, 1902).

De l'influence des maladies intercurrentes dans la marche de l'épilepsie. M. J. Voisin. (*La Semaine Médicale*, 1901).

Dr. Louise G. Robinovitch read a paper at the New York Academy of Medicine, based on the study of a series of cases occurring in the Asile St. Anne, in Paris, in which she laid great stress on alcoholic inheritance as a cause of epilepsy. In 140 cases over ninety proved to have traces of alcoholism in the immediate ancestry. In many cases, it is asserted, epilepsy is the direct effect of alcoholism in the preceding generation; in others the first generation may not be affected, whilst the grandchildren suffer; and in others it would seem as though the direct influence of alcohol lies so far back that it cannot be traced. Epilepsy is associated with insanity in this respect. Statistics appear to show that the children of alcoholic parents are especially prone to die young. This is partly due to neglect, but still more to the transmission of a disturbed nervous system. The instability of the nervous system produced by alcoholism is indicated by the convulsions to which the poison sometimes directly gives rise. The standard of alcoholism adopted was the use of more than two litres of wine *per diem*, a quantity which must be taken in conjunction with the easily excited nervous system of the French people. Other speakers supported the contention of the paper, but Dr. Berg thought the association of alcoholism with epilepsy had been over-stated.

M. Voisin divides pyrexial disorders into two classes with regard to their influence on epileptic attacks, according as that influence is beneficial or the reverse. In both cases the modification is usually temporary, but occasionally a permanent change in the course of the malady may result.

Class I. M. Voisin's experience goes to show that epileptic seizures are generally modified for the better by the occurrence of the following specific diseases :—

Erysipelas.—In four epileptic patients attacked with erysipelas at the Salpêtrière Hospital, there was a complete suspension of major and minor attacks during the acute stage of the illness. As soon as convalescence was established the minor attacks returned and were soon followed by the convulsive seizures.

Anthrax.—One diabetic and epileptic patient, æt. 58, was attacked with anthrax. She had previously an average of one major and one minor attack a week. From the onset of the anthrax to her death in diabetic coma, six weeks later, the epileptic attacks entirely ceased.

Acute pneumonia.—The influence of pneumonia, as observed in two cases, was variable. In both, the fits ceased only during the acute stage of the fever. In one case they did not again reach their former frequency, whilst in the other they returned with increased frequency and severity.

Measles.—In three cases the fits ceased entirely during the period of eruption, but returned afterwards with aggravated intensity. In one the average number of attacks per month increased from 4·3 to 76·6, the minor attacks from 23·6 to 30·5.

Phthisis.—There is an arrest of the epileptic seizures in phthisis with cavitation, and also in acute exacerbations at any stage. In the latter case the attacks return as soon as the disease becomes quiescent.

Diphtheria.—In an epidemic of diphtheria occurring in the year 1900, four epileptic children were attacked. There were no seizures during the stage of acute illness, but afterwards the original condition was resumed. Sixty-three epileptic children in the hospital were injected with antitoxin as a precautionary measure without any influence on the fits. It is interesting to note that in fifty-seven of these children severe eruptions were caused by the injections, and that these eruptions always occurred later and more severely in idiots and those affected with major epilepsy.

Class 2. The following fevers appear to increase the epileptic attacks:—

Scarlatina.—Féré has called attention to the effect of scarlet fever in aggravating epileptic attacks. Some years ago M. Voisin observed an epidemic in the Salpêtrière in which nineteen patients were attacked, four being epileptic. These four all died in the course of four or five days in the status epilepticus. The other fifteen recovered.

Influenza.—The effect of influenza is to increase the frequency of the attacks. Thus, one patient had 174 attacks in twenty days, and another 214 in a single day. One child, who had not suffered from epilepsy before, had five or six major fits a day during the attack. They ceased with the subsidence of the influenza. The pulmonary complications of influenza also aggravate the disorder.

Typhoid Fever.—M. Voisin states that typhoid fever is recognised as having a bad effect on epilepsy, and quotes two cases in which the number of attacks was doubled.

Three theories are propounded to account for the effect of specific fevers in modifying epileptic attacks. According to one, the raised temperature is directly responsible; but this is not consonant with the variable effect produced. According to the second, there is a localisation of the morbid process in the nervous centres, but there is no clinical evidence to point in this direction. The third theory attributes the modification to the toxins produced by the specific organisms, and this would allow for the difference in the results produced by different toxins.

M. Voisin finally points out that the slight rise of temperature amounting to 0·5° or 0·6°C., which usually follows a convulsive seizure, is often increased in the course of a specific fever, and may be as great as 1° or 2°.

CAUSES OF DEATH.

The Causes and Manner of Death in Epilepsy. By William P. Spratling, M.D. (*Medical News*, June 28th, 1902.)

Note on Status Epilepticus. By Dr. A. R. Urquhart. (*Scottish Medical and Surgical Journal*, April, 1902.)

Dr. Spratling remarks that epilepsy should not be regarded as a relatively harmless disorder as far as life is concerned, for experience shows that any epileptic may die suddenly at any time. He classifies the causes and manner of death as follows:—

(1) Death may occur suddenly in any case as the result of a single seizure. (2) It may result from a series of seizures occurring in rapid succession and ending in the status epilepticus. (3) It may result from an accident suffered in consequence of a fit. (4) It may be the result of any ordinary complication, with special preponderance in favour of diseases of the heart and lungs.

Death in the manner first described occurs in from 3 to 5 per cent. of the total number of fatal cases. In a series of 190 deaths at the Ohio Hospital for Epileptics, five, or about 2½ per cent., were reported as due to a single fit; and about the same proportion was observed in ninety-five deaths occurring in six years at the Craig Epileptic Colony. In one of the latter death took place whilst the patient was standing upright. She had gone to a table to get a glass of water, and apparently feeling the approach of an attack, she placed both hands on it for support. The muscular contractions about the thorax and neck were of sufficient violence and duration to cause asphyxia. So rigidly were the muscles contracted that the patient remained standing in the same attitude for some minutes after death had taken place.

About 23 per cent. of deaths from epilepsy result from the status epilepticus, but serial attacks are rarely fatal unless they lead to this condition. Status is to be feared as a rule when three or four well-marked and distinct attacks occur within an hour, and vigorous treatment should then be at once adopted. It occurs wholly irrespective of the type of the disorder, and may complicate attacks of petit or haut mal, psychic or Jacksonian epilepsy. There is reason to believe that some cases develope a "masked status," characterised by a few slight attacks, mostly pyschical or of petit mal, followed by high temperature, amounting sometimes to 106° or 107° F., and by more or less prolonged unconsciousness ending in death. An example of this condition is quoted, but as a tumour was found *post-mortem* in the temporosphenoidal lobe, it cannot be taken as an instance of what is liable to occur in cases of pure epilepsy. Dr. Spratling further remarks that cases of epilepsy are met with in which the convulsive force seems to expend itself almost entirely in the central nervous system, and to affect the muscular apparatus either not at all, or only by fine fibrillary tremors, chiefly confined to the finer muscles of expression about the mouth.

The third group includes about half as many deaths as the second, and in this are to be found the deaths from suffocation. There is of course especial danger of this catastrophe at night, and Dr. Spratling recalls one experience in which three out of about 100 epileptic patients were found dead in bed in a single morning. Out of 100 patients at Craig Colony, with attacks chiefly nocturnal, 13 per cent. always rolled over or were bent over on to their faces, and many would have died but for constant watchfulness on the part of the nurses in charge. The movement always occurred in the same direction in every attack, pointing to permanency in the location of the seat of discharge. Epileptics should sleep on a hard flat hair pillow, or better on none at all; and constant supervision must be maintained during the night.

In the fourth group deaths from tuberculosis and organic heart disease are most common. At Craig Colony, out of ninety-five deaths, tuberculosis was responsible for 24 per cent. and heart disease for 10 per cent. At the Ohio hospital 22 per cent. of the deaths were due to tuberculosis or pneumonia. The report of the New York State Commission of Health for the years 1900 and 1901 show that only 10 and 9·6 per cent. of deaths from all causes respectively were due to tuberculosis. It is therefore evident that epileptics are especially susceptible to this disease.

Dr. Spratling sums up his results as follows:—Out of every 100 deaths in epilepsy, about four will occur as the result of a single fit; about twenty-four will occur in the status epilepticus; about twelve will be due to an accident, the result of a fit; about twenty-four will be due to diseases of the lungs, chiefly tubercle, ten to organic heart disease, and twenty-six to other intercurrent diseases.

Dr. Urquhart records five fatal cases of epilepsy occurring amongst some 800 cases of mental disease treated in the Murray's Asylum at Perth. Three of these were due to the status epilepticus. In one of the remaining cases the patient died worn out mentally and bodily, and in the other death occurred from exhaustion after a large number of fits, but without the establishment of a true status epilepticus.

The writer discusses the question of treatment of status. His experience of venesection is apparently limited to one case of alcoholic epilepsy complicated with renal and hepatic disease. The fits ceased, but the patient died exhausted a few days later. Dr. Campbell Clark has reported one successful case. On the whole chloroform appears to be the most useful drug. Hyoscine and morphia are dangerous, and need to be administered with great caution. Nitrite of amyl and oxygen have been used by Dr. Urquhart with no real benefit. Bromides he believes to be absolutely useless for this condition.

SYMPTOMS.

Purpura Epileptique. Congrès Francais des Médicins Aliénistes et Neurologistes, Aout 1901. (*La Semaine Médicale*, 1901.)

Société de Biologie, October, 1901. (*La Semaine Médicale*, 1901.)

Epilepsie à crises dermalgiques. (*Journal de Médecine et de Chirurgie Pratiques*, December 10th, 1901.)

Pseudo-épilepsie d'origine vermineuse. (*Journal de Médecine et de Chirurgie Pratiques*, December 10th, 1901.)

M. Bourneville reports five cases of purpura following epileptic attacks. The seat of preference was the neck; the eruption was general in one case only. It always occurred the day following the fit and lasted not longer than four or five days. The patients were neither cachectic nor hæmophilic. M. Crocq reported a similar case. There was here, however, malignant disease of the bladder.

M. Féré reports the case of a man, æt. 62, who suddenly lost consciousness and remained comatose for half-an-hour. He then came gradually to himself and was found to be completely hemiplegic on the left side. In the course of some days he recovered the use of his limbs, but there was left a condition of exaggerated reflex irritability, which was greatly increased by an attack of influenza. The reflex movements of the arms and legs would periodically become spasmodic and spread to the opposite side of the body and face, with loss of consciousness. These epileptiform attacks were only brought on by the act of micturition or defecation. They disappeared under potassium bromide, but possibly their cessation might have followed naturally on the subsidence of the acute malady which first originated them.

Epileptic patients occasionally suffer from sudden attacks of tickling, itching, heat or cold in more or less extensive areas of the skin. M. Féré has recently recorded a case in which the patient suffered from attacks of superficial pain, starting from the genital region and extending over the greater part of the integument. The following case is also recorded:—The patient was a boy who at the age of 13 began to suffer from peculiar impulsive attacks. No matter where he was at the time, he would suddenly make a series of improper gestures, or say something inappropriate to the occasion of an objectionable character, and then resume his ordinary behaviour. Sometimes he denied all recollection of the occurrence, sometimes he would say in excuse, "It was too strong for me." At the same time he became subject to attacks of sudden and complete amblyopia, which lasted some minutes and then disappeared, or he would become temporarily colour-blind, seeing green as red. There was no accompanying headache. All these disorders disappeared under bromides, but returned on the premature suspension of the treatment. After one of the attacks he suddenly stood up, leant forward with the arms stretched out from the body, and complained of a sensation of intense heat over the whole of the skin. This was greatly increased by contact with any object, the least touch or movement of the clothes greatly aggravating the sensation. The face, meanwhile, was pale and the extremities cold. Three similar attacks were experienced, but they gradually subsided under increasing doses of bromide.

Dr. Besson publishes in the *Journal des Sciences Médicales de Lille* (abstracted in the *Journal de Médecine et de Chirurgie Pratiques*) a case of epilepsy due to an intestinal worm. The patient was seized with an epileptiform convulsion for the first time at the age of 35 years, which was repeated once a week without apparent reason. A vermifuge, however, was followed by the expulsion of a tape-worm, and the attacks ceased entirely. The following special points are suggested as marking such attacks from those of true epilepsy:—The aura is prolonged sufficiently to enable the patient to take necessary precautions, and he therefore seldom hurts himself. In any case, injuries are not severe. Though the attack itself closely resembles that of true epilepsy, the period of coma is often more prolonged. Remissions are often of long duration, and occur after the expulsion of the main mass of a tænia; they re-occur as the worm forms again. An important sign is the absolute failure of nervous treatment. In some cases bromides even increase the frequency of the attacks.

THE LOCALISING VALUE OF JACKSONIAN EPILEPSY.

Discussion at the Académie de Médicine, Oct. 2nd, Nov. 5th, 19th, 26th, Dec. 3rd and 10th, 1901. (*La Semaine Médicale*, 1901).

A discussion as to the value of convulsions in the diagnosis of localised lesions of the cortical motor area was raised at the

Paris Academy of Medicine on October 22nd, 1901, and continued at the five following meetings. The discussion was started by a case recorded by M. Dieulafoy, in which typical Jacksonian convulsions were thought to point to the existence of a gumma in the right Rolandic area. The patient was a man, æt. 40, with a syphilitic history. Without any previous symptoms he was suddenly seized in the middle of the night with convulsions, beginning in the left arm and spreading to the leg and face of the same side. These were repeated for several days with great frequency, and were always followed by localised paralysis. In spite of mercurial injections the patient passed into a state of coma, and died five days after the onset of the convulsions. *Post-mortem*, a gumma was found, not however in the Rolandic area, but in the anterior part of the right frontal lobe. Although the patient had suffered from no symptoms previous to the convulsions, the gumma was evidently of old standing. The speaker referred to five similar published cases, and came to the conclusion that there is a variety of Jacksonian epilepsy which owes its origin to lesions of the frontal lobe, and that nothing in the symptoms distinguish this variety from the ordinary cases in which the seat of mischief lies in the Rolandic area.

M. Laborde suggested that the occurrence of localised convulsions in cases of tumour of the frontal lobe might be explained by the existence, demonstrated in animals, of fibres passing from the frontal convolutions to the Rolandic area, as well as to the bulbar region.

At the following meeting M. Pitres acknowledged that Jacksonian convulsions were not necessarily diagnostic of a lesion of the motor area, especially in the case of tumours. When, however, there is a well-localised motor aura, when the convulsions spread slowly from the periphery towards the centre, when the patient remains conscious during their onset and evolution, and especially when they are accompanied by persistent monoplegia, pure or associated, there is very great probability in favour of a lesion being found in the opposite motor area. Even with such conditions, however, the certainty is not absolute. He thought it probable that whilst in some cases localised convulsions might owe their origin, as Jackson first suggested, to discharge starting in the cortical centres, they might in others be due to direct compression or irritation of the sub-cortical centres, according to the contention of Adamkievicz. On such a supposition it is possible to understand how epileptiform convulsions may develope with or without lesions of the motor cortex, how they may be cured in some cases by the lowering of intracranial pressure by trephining, and how in others the convulsions may continue even after the excision of the motor centres corresponding to the disordered movements.

M. Lucas-Championnière maintained that, although Jacksonian epilepsy could not be taken as certain evidence of irritation of the cortical motor area, yet this did not contra-indicate the operation of trephining, and he was of opinion that in M. Dieulafoy's case such an operation would probably have benefited the patient by diminishing tension. In seventeen operations which he had performed for Jacksonian epilepsy, relief or disappearance of the attacks had followed in each case. M. Laborde pointed out that experiment showed that stimulation of the zones in front of or behind the motor area might produce the same symptoms as stimulation of the motor area itself, and he drew the inference that surgeons should explore more freely in each direction if the lesion was not found in the expected position.

M. Raymond related the case of a man who was attacked with convulsions on one side of the body, and hemiplegia on the other. The skull was opened on the side opposite to that of the hemiplegia, and a lesion found. He also brought forward cases to show that Jacksonian epilepsy might result from a lesion of the frontal lobe, the pons, the medulla, etc. He contended that the symptom should never be used as an argument, either for or against cerebral localisation; similarly with the paralyses which sometimes develope after an attack of localised convulsions. In order that these may have any localising value it is necessary that they should persist in the intervals between the attacks, and moreover that they should be associated with other "specific" localising symptoms, such as mental disorder in tumours of the frontal lobe, or ocular paralyses in tumours of the bulb, etc. But to this M. Lucas-Championnière objected that to wait for the permanent establishment of paralysis would mean in many cases performing the operation not at all, or when it was too late to be of service to the patient.

The general result of the discussion was to emphasise the doubtful localising value of convulsions, and to show that even when accompanied by paralysis the diagnosis is by no means certain. Few, however, will go the length of asserting with M. Raymond that no value is to be attached to them in the matter of cerebral localisation.

TREATMENT.

La trinitrine dans le traitement de l'épilepsie. (*La Semaine Médicale*, 1901).

La résection du sympathique cervical dans le traitement de l'épilepsie. (*La Semaine Médicale*, 1901).

The Use of Chloretone in Epilepsy. By Dr. D. J. M'Carthy, M.D. (*International Medical Magazine*, August, 1901).

Traitement du Délire Epileptique par l'Alitement. Par le Dr. E. Marandon de Montyel. (*Revue de Médecine*, 10 Mai, 1902).

Die Anwendung des Dormiols bei Epileptikern. Von Dr. J. Hoppe. (*Muenchener Medicinische Wochenschrift*, 29 April, 1901).

Serum Therapy in Epilepsy. By Dr. Carlo Ceni (*Medical News*, March 8th and 15th, 1902).

R. Pellegrini studied the effect of nitroglycerine in 15 epileptic cases. He gave it in 1 per cent. alcoholic solution. From two to ten drops in 250 grammes of water were given daily in two doses. For the sake of observation the patients were treated for the first three months with bromide of potassium; they were then kept without medicinal treatment for three months, after which nitroglycerine was administered for a similar period. In no case was there any symptom of poisoning. In fourteen out of the fifteen cases the frequency of the attacks was markedly diminished during the last of the three periods. In ten, they were even less numerous than with the bromide. In seven, there was a marked diminution in the agitation which preceded, accompanied, or followed the convulsive attacks. The writer suggests that the drug should be alternated with bromide, in order to avoid the intoxicating effects of the latter.

Braun of Gottingen has tried resection of the middle ganglion of the cervical sympathetic in a number of epileptic patients, according to the suggestion of Jonnesco of Bucharest. The trunk of the nerve was divided above and below the ganglion. No immediate alteration of pulse or respiration was noted, but there was always a slight amount of ptosis, narrowing of the pupil and dilatation of the vessels of the head and neck. There was no keratitis, alteration in the position of the eyeball, or disorder of salivation or sweating, as observed by other surgeons. In a short time the eye symptoms ceased. The vascular dilatation began to subside the following day, an observation which contradicts Jonnesco's suggestion that the good effect of the operation is due to the permanent dilatation of the vessels of the brain.

One of the patients died of pneumonia, probably due to the anæsthetic. Another died five weeks after the operation in an epileptic fit. None of the patients were cured, though in some of the cases a year had already elapsed since the operation. In five cases the writer thinks that he has seen a slight diminution in the frequency of the attacks. He does not recommend further trial of the experiment.

Dr. M'Carthy records his experience in the use of chloretone in epilepsy. He does not recommend it for ordinary cases, but would use it where bromides have failed or give rise to objectionable symptoms. He quotes the case of a clergyman, who had taken bromides in half-drachm doses for a year, but in whom the drug produced mental torpor and lack of concentration to such an extent that he was unable to carry on his work. At the same time the fits returned with any attempt to leave it off. Chloretone in 15 grain doses was then given every night with excellent results as far as the fits were concerned and little, if any, depressing effect.

In another group of cases, where the epileptic attacks appear early in life and recur at short intervals and are associated with dementia, chloretone was used in place of the bromides in order to avoid the possible depressing effect of the latter. But in none of these cases were the results favourable.

In a third group, where the bromides fail to control the attacks, chloretone has sometimes produced brilliant results, and Dr. M'Carthy records a case in illustration.

Dr. Marandon de Montyel has made experimental trial of the treatment of epileptic mania by enforced rest in bed. The method was tried in nineteen cases, but in only one was it definitely of service. In this case the patient had had three attacks of mania with religious hallucinations since coming under Dr. Montyel's observation. These had each lasted from twelve to fifteen days. The following three were treated in bed, and the longest of these came to an end in the course of five days. In four other cases the attacks treated in bed presented some points of improvement over those treated on ordinary lines, but the results were indefinite. In ten cases the treatment had no effect in the direction either of improvement or of aggravation, and in the remaining four the severity of the attacks appeared to be distinctly increased. Dr. Montyel now adopts the plan of determining first the character of the seizures and then treating one attack with rest in bed. If no diminution either in the severity or duration of the symptoms is noted, the treatment is abandoned: if, on the other hand, improvement results, further trial is given to the bed treatment.

Dr. Hoppe has used dormiol in the treatment of status epilepticus with good results. Dormiol is chemically a dimethyl-ethyl-carbinol-chloral, and it is claimed that it is without harmful effect on the heart and circulation. The patients in whose case Dr. Hoppe made experimental trial of the drug were all children or young adults, the oldest being sixteen years of age. In most of these the fits were apparently due to some organic affection of the brain. Six cases are reported, with two attacks of status. In all of them the convulsions ceased in from a quarter of an hour to half-an-hour, and were followed by prolonged sleep. In previous attacks which had not been treated with dormiol the attacks had lasted much longer, generally for several hours and sometimes during the whole day. The drug was given by rectal injection in doses generally of 2½ grammes. Dr. Hoppe does not think that dormiol is suitable for the prolonged treatment of ordinary epilepsy, but he recommends its use for cases accompanied by mental disorder and restlessness, and in any case in which, owing to the severity of the disease, the patient is becoming exhausted and it is of importance to obtain sleep.

Dr. Carlo Ceni records a series of cases in which the serum obtained from epileptic patients was injected for the treatment of epilepsy. His paper suggests certain criticisms which are published elsewhere.

REVIEWS.

NOTHNAGEL'S ENCYCLOPÆDIA OF PRACTICAL MEDICINE.*

THE third volume of Messrs. Saunders' English Edition of Nothnagel's Encyclopædia deals with the three most common exanthemata—diphtheria, measles, and scarlatina. German measles and Dr. Clement Dukes' recently described "fourth disease" are also briefly described. The great detail with which the three first mentioned diseases are considered makes the volume one of the greatest importance to the clinician, and it is in every way worthy of association with its two admirable predecessors.

The article on diphtheria is, we gather, an original one from the pen of the editor of the volume, Dr. W. P. Northrup—not a translation from the German. It is of the very highest excellence. Very detailed consideration of the ætiology of the diseases dealt with is a prominent characteristic of the whole Encyclopædia, and Dr. Northrup has followed out the same plan in his contribution. The thorny subject of "pseudo-diphtheria" is fully dealt with, and we gather that the author takes up his position on the whole with those who maintain the independent nature of these organisms; but it is clear that he regards the whole matter as at present unsettled. He attributes symptoms of general infection to septic organisms rather than to the diphtheria bacillus. The symptomatology of the disease, together with the complications and sequelæ, are most graphically and fully described, and there is a useful consideration of the difficulties of diagnosis, with a warning as to the unreliability of the results of direct examination of the exudate without cultivation of the organism. Some very striking figures are quoted showing the enormous diminution in the mortality following tracheotomy and intubation effected by the introduction of antitoxin, a diminution which is altogether out of proportion to the saving of life in diphtheria cases as a whole. Preventive injection of persons subjected to infection is urged, especially in children's hospitals, and some interesting statistics are obtained from certain epidemics of measles in which such injections greatly lessened the number of cases which became complicated with diphtheria. It is noted as a curious fact that in measles the period of immunity conferred by antitoxin is unusually short. Dr. Northrup analyses the statistics of diphtheritic paralysis, and concludes that if treatment with antitoxin be begun early and the remedy given in sufficient doses, the occurrence of this complication will probably be avoided. The section ends with an unusually full consideration of the claims of intubation as an efficient and safe substitute for tracheotomy.

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* Nothnagel's Encyclopædia of Practical Medicine. Saunders' English Edition. Diphtheria, by William P. Northrup, M.D. Measles, Scarlatina, German Measles, by Theodor von Jürgensen, M.D. Edited, with additions, by William P. Northrup, M.D. Authorised Translation from the German, under the Editorial supervision of Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Philadelphia and London: W. B. Saunders & Company. 1902.

The chapters on the acute exanthemata are introduced by an interesting discussion of the nature of these disorders and their relation to one another. The question of the independence of each is even seriously considered, though of course the usual result is arrived at; but stress is laid on the fact that "in respect to both the increase and the diminution of the number of cases of acute exanthemata, the group is affected as a whole." In other words, the acute exanthemata tend to come and go together.

Professor von Jürgensen's section on measles is a most admirable piece of work. Very valuable use is made of the Danish records of the Faroe Islands epidemic, and Dr. Northrup, the editor of the volume, rightly comments in his preface on the excellent manner in which these records have been abstracted. Constant reference is further made to the wide experience of the disease obtained by the writer in the Tübingen Policlinic, with the result that the whole section is a most authoritative exposition of the subject. Detailed consideration is given to the natural history of measles, and the sources and periods of infection; and amongst many results the writer comes to the conclusion that the infectiousness of the pre-eruptive period is fully established, whilst he would regard the stage of peeling as probably, though not certainly, innocuous. The occurrence of infection through a third person or through clothes is not regarded as proved. The commonly accepted relationship between measles and whooping cough is further dismissed as unsupported by facts. The chapter on "pathology" is, as throughout the Encyclopædia, devoted to symptoms, complications and sequelæ; and it is impossible to imagine a better description of the disease and its manifestations than is here given. Especial praise may be given to the description of the numerous complications to which measles is liable. The relation to diphtheria and the measures which should be adopted to prevent the development of the latter are again repeated.

Scarlatina and German measles are also described by Professor von Jürgensen, and the same excellence of workmanship is again noticeable. The greatest interest attaches to much of the section on scarlet fever, and perhaps especially to the views of the writer on the vexed question of its relation to streptococcus infection, and to puerperal septicæmia. A strongly negative position is taken up on both these matters after a very full consideration of the evidence for and against the conflicting views. The original article on German measles was written before the appearance of Dr. Clement Dukes' papers on the "fourth disease," but the omission is remedied by Dr. Northrup, who, however, does not regard the independent nature of the condition as by any means established.

CLINICAL LECTURES ON HYDATID DISEASE OF THE LUNGS.*

THIS book is based on a series of lectures delivered in 1897 to students attending the clinic of the Adelaide Children's Hospital, though these have been somewhat modified for publication in their present form. The volume gives a useful and complete account of a condition which in England is regarded as of very rare occurrence, though it is one with which Australian physicians are very familiar. So common is it indeed, that Dr. Lendon regards it as only a wise precaution to provide himself with the means of rapidly incising the chest-wall in every case in which he performs paracentesis thoracis, lest a mistaken diagnosis should lead to the puncture of a hydatid cyst with imminent danger to the patient from the premature and inefficient expulsion of its contents.

Dr. Lendon does not burden his book with a repetition of the well-known life history of the tænia echinococcus, and only devotes a very brief introductory chapter to the description of the different stages of a hydatid cyst as met with in the lung. He then describes in successive chapters the unruptured cyst, the rupture of the cyst, the ruptured cyst and the empty lung cavity, and subsequently deals with complications, cysts arising in the pleura, and the extension of abdominal cysts into the thorax. The various stages of the disease are illustrated by well-described and interesting cases, and a full discussion of the symptoms and the signs by which the presence of a cyst may be suspected will be found. In the diagnosis of thoracic cysts of abdominal origin, two important conclusions suggested by the author's experience may be quoted. He would lay great stress

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* Clinical Lectures on Hydatid Disease of the Lungs. By Alfred Austin Lendon, M.D. (Lond.), Lecturer on Obstetrics and Clinical Lecturer on Diseases of Children in the University of Adelaide; Visiting Medical Officer, Adelaide Children's Hospital. London: Baillière, Tindall and Cox. 1902.

"(1) on the possibility of any hydatid at the base of the right thorax being hepatic in origin; (2) on the probability of any case in which a daughter cyst has been expectorated turning out to be hepatic, because daughter cysts are comparatively uncommon in hydatid disease of the lungs." Brief chapters on the anatomy, pathology and etiology of cysts in the lungs and on the causation and prevention of hydatid disease in general, bring the book to a conclusion.

INTERNATIONAL TEXT-BOOK OF SURGERY.*

THE advances made in surgery during recent years have made it almost impossible for any single individual to write with any authority on all subjects in a surgical text-book. In the present work, as in several of the more recent publications on surgery, various well-known English and American surgeons—authorities on their own special subjects—have been enlisted to write articles on their own particular speciality. The result produced in this way may be considered a standard work of reference on surgical subjects.

The present volume is the first of a work of two volumes, and is devoted to General and Operative Surgery. Among contributors to it are such well-known names as Mr. H. C. Golding Bird, Mr. Watson Cheyne, Mr. Rushton Parker, Mr. W. G. Spencer, and Mr. Bland Sutton, of England; and Mr. Richard Cabot, Mr. McBurney, Mr. Lewis Pilcher, and Mr. Collins Warren, of the United States.

There are in all in the present volume some twenty-eight chapters, each one devoted to some particular branch of general surgery.. Space will not permit us to even enumerate the various subjects dealt with in the volume, all of which are treated in a masterly and thoroughly up-to-date manner. But we should like to call attention especially to the articles on Surgical Bacteriology, on the Pathology of the Blood, on the Technique of Aseptic Surgery, on the Surgery of the Spine, and on Diseases of Special Joints, as being of exceptional excellence and interest.

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* International Text-book of Surgery, Vol. I. By Gould and Warren. Philadelphia: W. B. Saunders and Company, 1900.

Like the majority of scientific books produced in America the illustrations are numerous, and as a rule extremely well executed; the coloured plates illustrating the articles on Surgical Bacteriology, the Surgical Pathology of the Blood, and on Gangrene, being especially good.

While the majority of the subjects are dealt with in some detail, there are others, such as for instance, Cerebral Concussion and Cerebral Compression, various general Diseases affecting Bones, the Clinical Signs of and Symptoms of several Special Fractures and Dislocations, which might with advantage have been treated more fully.

We have read the volume with interest and pleasure, and look forward to the appearance of its fellow.

TRANSACTIONS OF THE ROYAL ACADEMY OF MEDICINE IN IRELAND.*

THE nineteenth volume of the Transactions of the Royal Academy of Medicine in Ireland, contains as usual a large number of papers in the various departments of medicine and surgery. Those in the section of medicine are perhaps hardly as important as their predecessors in former volumes. The three of greatest interest are those which contain short reports of certain gastric and pulmonary cases by Drs. Calwell and Lindsay, respectively, and of two cases of rapid death associated with the "constitutio lymphatica" by Dr. Peacocke. In the surgical section there are three papers on gastric surgery by Messrs. Myles, Maunsell, and A. B. Mitchell. Mr. Blagney also contributes an interesting and important paper on removal of great lengths of intestine, in which he reports a case and investigates the results which have followed in a large number of published cases. In the section of obstetrics the report of the Rotunda Lying-in Hospital constitutes as usual an important feature. The pathological section contains the largest number of papers, most of them, however, of small dimensions. The paper by Drs. Dixon and Birmingham on the peritoneum of the pelvic cavity is a valuable anatomical study. There are four short papers in the section of State Medicine.

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* Transactions of the Royal Academy of Medicine in Ireland. Vol. XIX. Edited by John B. Story, M.B., F.R.C.S., General Secretary, Surgeon to St. Mark's Ophthalmic Hospital, Dublin. Dublin: Fannin and Company Limited. 1901.

DISEASES OF THE ORGANS OF RESPIRATION.*

We heartily welcome the appearance of Dr. West's treatise on the diseases of the organs of respiration. It is long since any authoritative and systematic work has been published on this subject, apart of course from the sections devoted to it in the various Systems and Enclyclopædias of Medicine. This work is systematic, and, from the writer's long experience both at St. Bartholomew's Hospital and at the City of London Hospital for Diseases of the Chest, and also from the immense amount of care which has obviously been bestowed upon it, it is certainly entitled to be regarded as authoritative. It is therefore a really important addition to medical literature. In style it is terse, brief, and to the point; in fact its one fault is that its style is so compressed that it gives somewhat the impression of a contest between space and matter. This feeling is unfortunately exaggerated by the manner in which the book is printed. There is no division into chapters, and apart from headings, no break in its pages from beginning to end. Moreover, the extremely small print in which a good deal of the author's original work is recorded makes these parts of the book unnecessarily difficult to read, and gives them a false air of dryness. The book is so important and contains such an exhaustive and admirable account of the disorders of respiration that we cannot help feeling that it would repay publication in a more extended form. The division into chapters and elimination of the small print, though probably involving the addition of a third volume, would add immensely to the ease and pleasure of reading.

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*Diseases of the Organs of Respiration. By Samuel West, M.A.,M.D., F.R.C.P., Assistant Physician and Lecturer on the Principles and Practice of Medicine at St. Bartholomew's Hospital, formerly Physician to the City of London Hospital for Diseases of the Chest. In two vols. London: Charles Griffin and Company, Limited. 1902.

It is impossible to find any other fault with the book, nor have we been able to discover any omission of importance from its pages. Especially good are the sections on the varieties of pneumonia, acute and chronic, phthisis and effusions into the pleura. These are the especially exhaustive chapters, but absolute thoroughness is the mark of the book throughout. As we have said, a good deal of original work is recorded here and there, especially in the sections on pneumothorax and other pleural effusions. There is moreover ample clinical illustration. In conclusion we can only congratulate Dr. West on having written a book which must undoubtedly take the position of the leading English work on its subject.

University of Birmingham.

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Wilkes, George Arthur

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Hird, Robert Beatson Dennis (*Scholarship*).

IV.—THIRD EXAMINATION FOR THE DEGREES OF M.B., CH.B.

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Class II.

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Rollason, Norman John Lancelot

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Houghton, William Cuthbert
Pickerill, Henry Percy
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Tangye, Claude Edward

VI.—First Examination for the Degrees of M.B., Ch.B.

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Clarke, Mary (*Scholarship*).

Class II.

Hincks, Arthur Cecil
Johnson, Claude
Sanders, Arthur Addison
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THE

BIRMINGHAM MEDICAL REVIEW.

OCTOBER, 1902.

ORIGINAL COMMUNICATIONS.

THE AUTO-INTOXICATIONS OF PREGNANCY.*

BY W. A. POTTS, B.A. (CANTAB.), M.D. (EDIN.), M.R.C.S (ENG.).

During recent years attention has frequently been directed to the possibility of auto-intoxication as a cause of disease; that such a condition may and often does account for functional disturbance is universally admitted; it is however now claimed that organic disease may originate in the same way; several writers on neurology have expressed the opinion that toxins absorbed from the alimentary tract may gradually produce effects on the various portions of the nervous system in no way dissimilar to those produced by excessive indulgence in alcohol, when continued for long periods of time. The toxins referred to develop in some cases after a continuous excessive ingestion of food stuffs without a correspondingly excessive elimination of waste products; in other cases, where there is no such excessive ingestion, they develop because the metabolic processes, in consequence of some inherent defect, are imperfectly carried out. Bouchard in his interesting work, "Auto-intoxication in Disease," has shown how the toxicity of the urine varies in disease, and how by testing the degree of its toxicity, we can form an idea of the amount of systemic infection. The whole subject is of great interest and great importance; in pregnancy where there is a heavier tax on the alimentary system, and probably always some toxæmia owing to fœtal metabolism, the possibility of auto-intoxication is much increased, and the consequences may be disastrous in the extreme.

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* Read before the Birmingham and Midland Counties Branch of the British Medical Association on 9th January, 1902.

From the very commencement of pregnancy disturbances of the alimentary system are liable to arise; flatulence and constipation are often even in the first few weeks troublesome symptoms in the case of women, who under normal circumstances, have no such irregularities. If the constipation is neglected, serious disorders may develop; it is unnecessary to enumerate them all, far less to discuss them all in detail. It is important to notice that toxæmia originating in this way may lead to abortion, and that not infrequently. Macé has lately published an account of such a case. Quite recently I saw a patient who suffered from constipation at intervals till the fourth month when colitis developed; after the acute inflammation subsided, the constipation and consequent toxæmia continued in spite of treatment by diet and purgatives, the latter giving only temporary relief; at the fifth month the pregnancy ended by an abortion after which, without active treatment, there was rapid recovery.

Pernicious vomiting is another result of toxæmia; doubtless all engaged in obstetric practice have had experience of the excellent results that may be attained in some cases of hyperemesis by attending to regular and free evacuation of the bowels; in fact in the majority of such cases, this is the only treatment necessary.

Many other gastric and intestinal disturbances may ensue, and in particular appendicitis, which is not such a very uncommon complication of pregnancy; colitis has already been referred to; as a matter of fact it develops more frequently in the puerperium, apparently as a result of the bowels not being kept regular from an early stage. Ptyalism will sometimes be found to have a similar origin; indeed both this condition and hyper-emesis may be regarded as an effort of nature to relieve the over-laden system by an increase of glandular activity. In the same way other systems may be affected by the retention of waste products; hence arise cramps, phlebitis, neuritis, and chorea: of these it may be said, as of the other disorders already referred to, that though they undoubtedly may originate in other ways, still it will be found in the majority of cases that the predisposing if not the exciting cause, is the toxæmia originating in the intestinal tract. It is not contended that all, or nearly all cases even of extreme constipation lead to such serious consequences, for even when the bowels fail in their duty of elimination, the kidneys work to relieve the system; if however, the kidneys fail from disease or a-function, a serious disaster in the form of an attack of eclampsia is inevitable. For generations eclampsia has been a great mystery, but it is now almost certain that the disease, if it may be called a disease, is really a condition of auto-intoxication. In justification of this opinion it is necessary to submit certain statements of fact, some of which must subsequently be discussed in detail.

Firstly then, all cases of eclampsia are found to have recently suffered from constipation generally of extreme degree.

Secondly, all remedies which have met with any general measure of success are remedies either of elimination or of dilution of toxins.

Thirdly, in 85 per cent. of cases of eclampsia examined *post-mortem*, the kidneys, which are the safety-valves of toxin elimination are found to be diseased.

Fourthly, the only other lesions frequently found *post-mortem* are in the liver, the organ chiefly concerned in the metabolic processes, and lastly, serious disease of organs other than the kidney and liver does not predispose to eclampsia. It may now be mentioned incidentally that the fact that eclampsia is more common in primiparæ can be explained on similar lines, Clifford Allbut having suggested that multiparæ have acquired an immunity to the toxins present. Further, the inevitably increased production of toxins in twin pregnancies would explain the relatively more frequent occurrence of eclampsia in that condition.

The statement that eclampsia is always preceded by constipation will probably not be disputed; it has certainly been my own experience and according to the published reports of cases, is also the experience of those who have enquired into the matter; the constipation has often been of extreme degree, the bowels sometimes not having been opened at all for as long a period as ten days. Diarrhœa is not so very uncommon in pregnancy, but it is a significant fact that so far as I am able to discover, no recorded case of eclampsia has been associated with this condition.

The statement that the remedies that have been found at all generally effective are remedies either of elimination or of dilution of toxins only requires consideration in order to be confirmed; hot baths, hot packs, venesection, the hypodermic injection of pilocarpine are all methods of elimination of toxins, and in the past these, with the more active purgatives, have formed the sheet anchor in successful treatment; on the other hand the injection of saline infusions which in recent years has often produced such happy results is simply the best means of diluting the toxins in the blood. It is true that no similar explanation can be given of the action of chloral and chloroform, but I do not think it has ever been suggested that these drugs can effect a cure; they are used merely to control the more distressing symptoms till remedies of elimination have had time to take effect; probably in the future their use will be entirely discontinued as has already been done at the Rotunda Hospital. The beneficial effects of morphia, which recently has often been used with success may be explained on similar lines; it does good because it checks proteid metabolism, and therefore prevents more toxins being developed till those already present in the system have been eliminated. The most recent remedy of all, thyroid extract, does good because it greatly stimulates metabolism and elimination.

The statements that in 85 per cent. of cases of eclampsia examined *post-mortem* the kidneys are found to be diseased, that the only other constantly discovered lesions have been in the liver, and that serious disease of organs other than the kidney and liver does not seem to predispose to eclampsia, require no further elaboration.

We may now reflect that if eclampsia is a result of auto-intoxication it should be possible to prevent its occurrence. The art of obstetrics is daily becoming more prophylactic in nature; of no disorders of pregnancy is this more true than of the class of diseases under consideration. If the diet is carefully regulated, all excess, and especially all excess of proteid food, being avoided, and the daily action of the bowels attended to, little anxiety need be felt as to the development of eclampsia. The best purgatives for continuous use are the salines; in many cases cascara is most useful, and in an emergency mercurials are usually indicated. At the same time it is necessary to carefully watch the progress of events, and with a view to this, regular systematic examinations of the urine are necessary; it is not sufficient merely to test for the presence or absence of albumen, as there is often serious disorder without any warning being given in this way; it is necessary and far more important to estimate the urea excretion which rises and falls *pari passu* with the elimination of toxins; as long as that remains good, all is well; if it fall below the normal, active treatment of an eliminating nature is necessary. Possibly the method of estimating the presence or absence of toxæmia by examining the freezing point of the blood or urine may become a help in the diagnosis. Diminution in the amount of urine is a well-known danger signal, as is also a pulse of high tension, or one that is abnormally slow. A very important pre-eclamptic sign is œdema, and it is particularly significant if the œdema is general and very solid as in myxœdema. Restlessness, epigastric pain, vomiting, loss of memory, dimness of sight and other abnormal conditions of vision, also involuntary twitchings of the muscles of the arms and legs are generally recognised as anxious symptoms.

Should at any time owing to some unfortunate neglect symptoms suggestive of eclampsia or eclampsia itself develop, very active treatment is necessary; the methods of treatment that have been most successful in the past need not be discussed, nor is it necessary to more than refer to the great value of saline injections, and of morphia, in quarter or half-grain doses given hypodermically and repeated if necessary. It seems advisable, however to consider more carefully the action of thyroid extract which has, during the last twelve months, been used with such signal success by Oliphant Nicholson. Time alone will show whether in practice it is so successful as to entirely supersede the more old-fashioned remedies; for the present we must content ourselves with considering the rationale of its use.

In the first place we may notice that the changes which have been observed in the blood and circulation during pregnancy also occur after thyroidectomy; these changes are an increase in the volume of the blood, with a diminution of the solid constituents; the red corpuscles and albumen are relatively diminished, while the white corpuscles are increased; there is relatively more water and more fibrin. It is, therefore, not unreasonable to suggest that in pregnancy these alterations in the condition of the blood are due to thyroid insufficiency. The fact, which has often been observed, that in pregnancy there is usually some thyroid enlargement, would seem to indicate an effort on the part of nature to make good this deficiency. It is interesting to note that Lange observed 25 pregnancies without the usual thyroid hypertrophy; in 20 of these albuminuria developed. On the other hand, he gave large doses of thyrodin to a certain number of pregnant women with the usual thyroid enlargement, and the gland markedly diminished. Murray has shown us how progressive thyroid enlargement in young women who are not pregnant may be checked by the administration of thyroid extract; I cannot help thinking that similar treatment is often called for in pregnancy. With regard to the effect of thyroid administration we know that the results are largely due to the action of iodo-thyrin, which has been found by Robert Hutchison to greatly stimulate metabolism and to increase the excretion of urea; Hurry Fenwick has found thyroid extract to be a diuretic in cases of kidney disease although it has no such effect in healthy persons. Horsley states that the internal secretion of the thyroid glands modifies or destroys substances circulating in the blood which are harmful to the general economy.. Oliver and Schafer have shown that it lowers blood pressure and dilates the arteries; if therefore the arrest of the flow of urine, which is the fuse of eclampsia is due to an intense spasm in the renal arterioles, owing largely to a stoppage in the supply of iodo-thyrin, the administration of thyroid extract is eminently desirable.

As regards the method of giving the thyroid, Nicholson gives 5 grains of the extract twice daily at first, and then three times; at the same time he stops all proteid food, a matter of great importance. When a fit is imminent, or convulsions actually occurring, he considers that given in this way its action is not sufficiently rapid; he therefore gives 10 or 15 minims of the liquor thyroidei hypodermically, and repeats the injection every hour or two if there is no improvement; in great emergency he relies on morphia for immediate relief, till the thyroid has had time to act.

There is good reason to think that in many of the intoxications of pregnancy which do not go so far as eclampsia, thyroid extract would be beneficial; in a case of hyper-emesis, it is true I did not get any good result from its use, but I was more successful in a case of depression with vague fears of an impending fit; here 5 grains twice daily for three days was all that was required. I believe it will be found to be most efficacious in cases where there has been an excess of proteid elements in the food. There seems to be little doubt that it is a most powerful means of treatment worthy of careful trial in obstetric practice.

SOME COMMON FORMS OF ECZEMA.*

BY A. DOUGLAS HEATH, M.D. (LOND.), M.R.C.P.

In endeavouring to divide that common disease Eczema into well defined groups having distinct characteristics, it is possible to easily recognise several bases on which classification can be made. The eruptions may be separated for instance by the characters of the skin manifestations themselves.

Thus there are dry scaly eczemas, weeping eczemas, and erythematous eczema only to mention a few, but classification from this standpoint is extremely difficult as the same eruption may show different essential lesions at different times, or at the same time on various parts of the body.

This is very noteworthy, just to take one example, in some middle aged subjects, who may have dry papular and extremely itchy eczema on the extensor surfaces of the limbs, but in other situations may suffer from erythematous or vesicular eczema, the latter being accompanied by an abundant serous discharge.

From a clinical and practical point of view therefore, it is probably most useful to classify the various forms of eczema according to the periods of life at which they are most commonly seen, always remembering what a variable disease eczema is, and what a multitude of conditions may cause changes in its appearances. In the description of the various types that will be outlined, I shall endeavour as far as possible to give the most common first, and then to deal with the variations that may be seen in them from various causes.

In *Infancy*, a special proclivity on the part of the skin to irritation of all kinds is very noteworthy, and is probably mainly due to the outer layer of the skin being less horny and resistant than in the adult. It seems also more frequently possible ascribe the onset of eczematous eruptions to intestinal irritation from unsuitable diet in the infant than in grown up persons.

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* Being a paper read before the Midland Medical Society during the past Session.

Some infants are only a few weeks old when eczema starts in them, and it is often noticed to begin around the groins and axillæ, or where folds of skin from being always in contact are kept constantly moist.

This moisture after a time, quickly in some, more slowly in others, acts as an irritant and causes a diffuse redness or condition of erythema intertrigo as it has been called. This is simply a localised erythematous redness at first, but soon becomes a genuine eczema owing to the delicate cuticle becoming more and more sodden by the moisture and exposing the surface underneath to irritation. The reddened surface will then be covered with a clear serous exudation—or, should irritation be more prolonged—will assume a dull grey colour from this lymph having become coagulated. The bright red margins of the eruption will then show up in marked contrast to this grey surface, and a number of red papules or erythematous patches beyond these margins may show that the eruption is spreading on to other regions of the body.

This condition of affairs is often the starting point of an eczema which may at a later stage involve the whole body. In ill-nourished, cachectic, and strumous children, this condition of intertrigo may go on to even more serious results, and I have seen several cases of gangrenous dermatitis in the groins and axillæ, which apparently began as an ordinary eczema intertrigo. It is commonly observed that eczema intertrigo shows itself very frequently in very fat children who are otherwise in excellent health, and it requires the greatest care on the part of the nurse to prevent it starting in such infants as are predisposed to it. Syphilitic children, as is well known, have a special tendency to these troubles, and they naturally require constitutional remedies in addition to the local measures about to be described.

The *treatment* of eczema intertrigo requires chiefly scrupulous care in cleanliness, so that all irritating products may be removed. After washing with a well selected soap, the flexures of the child should always be most carefully dried, preferably with warmed soft towels. After washing, some non-irritating dusting powder as zinc oxide and starch, or this with finely powdered talc added, may be used, and a cure is usually readily brought about. For very bad cases with great irritation. calamine lotions are most sedative and useful, and should gangrenous dermatitis follow, boracic acid fomentations, not too moist, are excellent applications and should be frequently changed. An internal tonic treatment is usually indicated in these latter cases.

Eczema in *Infants* may be for practical purposes divided into two great classes, general and local eczema, the latter being met with around special regions as the ear, the nose, or scalp. Both general and local eczema in infants and young children have a special tendency to be pustular. In adults, on the other hand, pustular eczema is only rarely seen. It is well known that the first of these two classes—*the General Eczema of Infants*—is particularly resistant to treatment, and the disease often goes on for months, or sometimes even years, before a complete cure is effected. I have seen cases of eczema of this type lying enveloped in bandages from head to foot for months in spite of constant changes in treatment, and one cannot be confronted with a more difficult case to treat than one of this form of eczema.

The skin lesions in these cases of universal eczema in infants and young children are usually very striking. Large pustules and papules cover the face, scalp, and limbs, which being the parts most accessible to scratching always show the most intense inflammatory changes. The itching and irritation set up by the eruption causes the child to be very restless, especially at night, but it is very remarkable what a little effect this has on the general health, which often remains good. Scratching is naturally indulged in by children when the hands are left free, and this causes frequently a secondary infection of contagious impetigo. The little patient is then covered with dirty yellow crusts, which are picked off whenever he is left unobserved.

Enlargements of the lymphatic glands are often seen, and suppuration sometimes takes place in them. Small boils causing intense pain may also be present, and slight feverishness and malaise may be noted from time to time.

Sometimes cases of this form of eczema get well and remain so for years, but develop eczema again later in life. A very severe eczema of the face and hands in a youth 19 years of age that I saw a few months ago, had been present since the age of 14 years in these situations. The patient gave a previous history of eczema from which he had suffered from infancy up to the age of 4 years, when it left him.

The *treatment* of universal eczema in infants and young children requires a careful regulation of the dietary, as it is often in over-fed children that this affection is particularly obstinate. Sometimes, on the other hand, the diet requires to be enriched, and the administration of cod-liver oil in addition may be useful in rickety, strumous, or cachectic children.

Locally, in acute stages, all scabs and crusts should be removed by soaking in fresh olive oil, and then some very sedative lotion or ointment may be applied. Later, when the case becomes more chronic, weak tarry ointments will often yield splendid results. For the treatment of a small patch of pustules a weak mercurial ointment may be used.

It is often necessary to tie up the hands of children in gloves, or to adopt some other means of restraint to prevent them scratching themselves or disturbing their bandages.

The second group, which comprises the *local* types of eczema seen in infants and young children is a very large one. These local forms of eczema are generally to be seen on the face, ears, nose, or scalp, and external irritation will frequently keep up these limited patches of eczema for a very long while.

The most frequent seat of this variety of eczema is probably behind the ears where a deep crack may be often seen where the external ear joins on to the scalp. This crack readily bleeds from slight traumatism, and the pain and irritation arising from it leads to scratching on the part of the child and tends to spread the eruption to neighbouring parts. Pustules will be often noticed at the margins of the reddened area, and any friction of these may lead to a local spread of the eruption, or the production of a secondary contagious impetigo on various regions of the body.

Sometimes similar limited patches of eczema may be seen in children around the nostrils, mouth, and eyes, the moisture of these situations helping to render the skin around more prone to the eruption. Purulent discharges from ozæna, conjunctivitis, or middle ear disease are very commonly the cause of eczema on neighbouring portions of the skin.

When the scalp is affected in young children "nits" should be carefully looked for, as irritation from pediculi may be aggravating the disease by causing scratching. It is also important in these cases to examine the scalp for small abscesses (the so-called cold abscesses) which may form under the skin in debilitated children and require to be opened.

For the *treatment* of these local eczematous eruptions in children only the mildest of preparations should be used. For very acute catarrhal cases dusting powders composed of oxide of zinc, starch, and talc are very useful, and half a drachm of camphor may be added to the ounce as recommended by Hyde of Chicago if there is very much itching.

For other acute cases the calamine lotion of the General Hospital pharmacopœia, either alone or with a small quantity of carbolic acid added to relieve irritation, is particularly to be recommended and rapidly dries up the moistened surfaces.

In subacute stages, sedative ointments are more useful and may be used in great variety. Zinc oxide ointment and weak ointments containing oleate of zinc, oxide of bismuth and icthyol will often bring about a speedy cure. In more chronic stages of these local eczemas, the tarry and weak mercurial ointments probably yield better results, or the numerous glycerin jellies or mildly stimulating plaster mulls of Unna may be used.

It will perhaps be noted that I have not included the lichen simplex of children amongst either general or local eczematous eruptions, as I feel in line with those who regard them as distinct clinical conditions, although they sometimes resemble eczema very closely.

About the time of *puberty* eczema again seems to show a partiality for the face and neck, and frequently causes dry scaly and almost ringworm-like patches in these situations. Sometimes these dry areas crack deeply and cause considerable pain. I have seen several instances in which young persons have suffered severely from this form of eruption during the colder months of the year. Sometimes the patches of eruption show more infiltration and skin thickening, and they may become pustular after exposure to cold, after washing, or after irritation by some of the stronger stimulating ointments.

Now and then these cases become very chronic, particularly when eczema has been previously present in childhood, and in those with ichthyotic skins.

It is interesting to note how often this condition is met with in a very florid type of face, just as later in life the erythematous form is often seen on the faces of those who suffer from exposure, or who have rather a predilection for the beer jug.

In those leading sedentary lives, like clerks and shop assistants, this facial eczema is sometimes very difficult to cure, but it may get rapidly well during a summer holiday in the country or at the seaside, the purer air, better hygienic surroundings, and possibly prolonged exposure to rays of light, causing a rapid improvement. In a case of this type, a patient under my care invariably gets well every summer after a stay at the seaside, but usually relapses again two or three months later.

Minor degrees of this tender skin are often seen in strumous subjects associated with blepharitis, and in those with ichthyotic skins the condition is quite common.

For most of these cases there is no better remedy than a weak ointment of oleate of zinc applied at night and rubbed off with a dry piece of cloth in the morning. If a patient will put up with the unsightliness of a varnish for a few days, the case may be rapidly cured and irritation prevented. Varnishes or gelatin pastes, containing oxide of zinc and calamine, are some of the best for this purpose. I have sometimes used flexible collodion with the same drugs to produce a thin flesh-coloured glaze.

In *young adults* between the ages of 20 and 30 years another well-known type of eczema is met with, although it is probably more common a little later in life. I refer to eczema of the flexures. This may be seen in a very dry papular form accompanied by great itching in the flexures of the knees and elbows, and the groins and axillæ practically always share in the affection if it is at all severe. Some of these cases are very chronic, and the eruption, like psoriasis, sometimes shows a distinct tendency to recur at certain seasons of the year.

Eczema of the flexures varies very much in its appearances from time to time. The eczematous areas may be dry, cracked and fissured with enormous skin thickening, or they may be very moist, or again very large, raised, and almost granulation-like masses in the same situations may almost lead to a doubt that the disease can be eczema.

The following is a good example of the last group:—

A young lady, 18 years of age, accustomed to an outdoor life, had suffered from eczema of the axilla for five years. The disease prevented her from playing golf, or in any way freely using her arms. On examination, there were two large red granulation-like masses in each axilla, each being as large as a five shilling piece. The skin around each of these very sharply defined and very raised patches was perfectly healthy. The patient made a very quick recovery on the patches being painted with nitrate of silver.

In a class of patient very common in all our large towns—where sedentary lives are led by so many young men and women, and constipation and anæmia are common—this class of eczema is not by any means infrequent. When present in the groins or around the anus, its presence is often kept concealed for months until the patient is well nigh worn out by the irritation and sleeplessness which are always present in a greater or less degree. Piles and slight fissures of the anus are often associated with eczema in this region, and should always be looked for and treated, as they tend to keep up irritation.

For the treatment of eczema of the groins, axillæ, or other flexures, there is no better remedy than silver nitrate, 10 grs. to the oz. of spirits of nitrous ether. This treatment causes a little stinging pain when first applied, but it rapidly relieves the intolerable itching and enables the patient to sleep. It is probably better to use it at first every other night, but it can soon be used twice daily when the skin surface becomes more dry and healthy. I have frequently seen very severe cases of eczema of this type of months' duration clear up and be perfectly cured in a fortnight or three weeks. The only complication which I have found troublesome in these cases is an obstinate folliculitis, which may be left long after the eczema proper is cured.

When *middle age* is reached the system begins to feel the effects of overwork, overfeeding, and anxiety, and eczema is especially prone to take up an attack on these debilitated constitutions.

One of the most important forms of eczema met with at this time of life is the erythematous, which is very prone to attack women about the time of the menopause, but is also very common in stout plethoric men of about the same age. It has a special tendency to involve the face, and as the upper and lower eyelids very early swell up enormously, a close resemblance to facial erysipelas is brought about. There is no constitutional disturbance however present in eczema, which distinguishes it from erysipelas. The reddened surface is also very early rough from desquamation in erythematous eczema, whereas desquamation is only a late event in erysipelas. An exposure to a cold wind or draught is quite sufficient in some persons to bring on this very severe form of eczema, and recurrences are common in those who are prone to it. The eruption may rapidly disappear, or a subacute form may be left in isolated patches, which are ready at any time to restart an acute inflammation. A baggy condition of the lower eyelids may be left long after the eruption has disappeared, and an increased pigmentation of the skin may also be obvious for a long time.

For the treatment of erythematous eczema, finely powdered calamine and oxide of zinc, of each ʒss, glycerine ♏xx and water to an ounce, makes a very good sedative lotion. It is best applied to the face on masks of lint, which should be kept moist constantly so that the surface may be cooled by evaporation. The cooling and sedative ointments may be used in the subacute stages. Such ointments are those of oxide of zinc, lanolin mixed with fresh olive oil, and oleate of zinc, especially when the latter is used with a basis of olive oil and lanolin. It is well to remember that lanolin alone does not spread out well on the surface of the skin, and it therefore requires some oily substance to be added to it.

In individuals of a full habit of body, and at the same period of life, from very slight irritation, it is not uncommon to see acute eczema of the scalp set up, and in men the hairy surface of the beard will often share in a similar form of disease. This will often be vesicular with a very copious exudation of lymph, which by drying mats the hairs together with a pale yellow glaze. The irritation from this form of disease is often very great, and scratching and pulling on the hair tends to crack the protective glaze and prolong the disease.

As far as possible it is better to cut the hair very short, except in women, and I think this yields quite as good results as shaving, which is extremely painful to the patient. If a very sharp and flat pair of scissors be used, the hair can be cut down to about one-sixteenth of an inch or less in length, and can be kept short by repeated cutting.

In very acute stages with rapid formation of vesicles, the dusting powders that I have previously indicated may be used, and help to form with the exudation a firm dry covering under which the inflamed surface can heal. In subacute cases a very thick calamine cream has several times been successful in my hands for treating eczema of the scalp in women. Later on, especially for eczema of the beard, very weak sulphur and mercurial ointments are very useful.

I come next to a very important class of eczema—the acute generalised form in which the disease may rapidly progress until a state resembling general exfoliative dermatitis is reached. Sometimes patches of local eczema have been present for years before some condition of bodily health or external irritation excites a rapid spread of the disease. I have known such an attack caused by excessive indulgence in alcohol, and have seen a chronic eczema of the wrists which had been present for seven years suddenly spread and cover the whole body after long continued immersion of the arms in water.

When eczema is universal it is well to remember that it very nearly always shows polymorphism. Papules are perhaps present in one place, erythematous patches in another, and vesicles in a third. This fact helps one to distinguish eczema from pityriasis rubra and scarletiniform erythema. Universal eczema, whether met with at middle age, in the aged, or in young children, always requires rest in bed for its treatment. Different portions of the eruption also require, as a rule, different treatment. It is no use treating a vesicular eruption in the same way as a dry squamous. Harm will only come from such treatment and prolongation of the disease. The chief indications in treating universal eczema are only to use very mild remedies. No drug should be ordered which could produce harm by absorption.

If portions of the eruption show a very large amount of angry congestion, sedative lotions of calamine or subacetate of lead may be used, but great care must be taken not to chill the body in these cases for fear of renal complications.

Simple sedative ointments, such as oxide of zinc, the ung. diachyli albi of Hebra and ointments of oleate of zinc are extremely useful for dry cracked papular and scaly patches. The limbs and trunk may be well anointed with these ointments, and then bandaged after covering with butter cloth or fine muslin, which hold ointments well in their meshes. As the case becomes more subacute or chronic, more stimulating preparations as the tarry ointments and boracic acid ointment may be used, or small quantities of tar, oil of cade or ol. rusci may be added to the more sedative ointments.

No mention has hitherto been made of internal medication in the treatment of eczema, but I think universal eczema is nearly always benefited by the administration of internal remedies. This is especially so I believe in the middle aged and aged; in young children an alteration of the dietary is usually all that is required.

For very acute universal eczema with intense hyperæmia of the skin, I have certainly seen good results from the administration of vinum antimoniale ten minims, every two or three hours at first—a treatment strongly advocated by Mr. Malcolm Morris. This may be combined with saline laxatives and tonics as dyspnœa, constipation, and a very low state of bodily health are frequently present along with eczema. The haust. magnesii sulphatis cum ferro of the General Hospital pharmacopœia is what I usually order at the start of such a case in full blooded subjects, or where there is high arterial tension. If there is any evidence of gout a mild course of calchicum with alkalis or salicylate of soda should be ordered. I have found these anti-gouty remedies, however, much more useful in the papular itching eczema of the fingers, which is undoubtedly common in gouty subjects.

In middle aged men and women, especially in the latter after repeated pregnancies, chronic eczematous areas form around varicose veins on the legs. This variety of eczema is often associated with a very abundant scale formation, and sometimes enormous enlargement of the leg takes place (elephantiasis) with great thickening of the skin. The affected limb, when only one is attacked by the disease, may be sometimes twice the size of the healthy one. In other cases, the eczema so lowers the vitality of the tissues that they break down and form superficial ulcers. Rest in bed with the limb well raised will hurry the cure of this form of eczema, and ointments containing salicylic acid may be necessary to remove or soften the epithelial hypertrophy. The pressure of a rubber bandage over the dressing is most beneficial in these cases.

Another form of eczema met with in elderly people, known as eczema rubrum, is characterised by the occurrence of very vivid areas of eruption on the limbs and trunk. It is sometimes curiously symmetrical, and may take its origin from a chronic varicose eczema. It is certainly most common on the lower limbs. Its treatment is best carried out with the milder sedative ointments mentioned under the treatment of other classes of eczema. There is no doubt that it forms clinically a very distinct class by itself, as its appearances are quite unlike ordinary eczema. It is also in my experience rather uncommon.

Finally, there is left for notice the eczema of the *aged*, whose skins, from the loss of fat, are parchment-like, dry, and excessively irritable. Eczema of the groins and perinæum is very common, and except that it is more constantly dry and papular, does not differ from that of middle age or youth, and requires a very similar though somewhat milder treatment. Eczema of the aged is very liable to be accompanied by a curious prurigo-like condition of the skin, small round urticarial papules being scattered amongst the eczematous areas proper which lead to very intense irritation, and cause terrible sleeplessness. This condition in a lesser degree is also not uncommonly seen associated with pediculi corporis in the aged, and is possibly due to reflex irritation. It is thus often necessary to order strong anti-pruritic lotions or ointments in old people; otherwise the irritation may become intolerable when they get warm in bed. Eczema around the ears and in the external auditory meatus is very common at the same period of life, and is very resistant to treatment.

In conclusion, I can only briefly mention the great class of seborrhæic eczema, with is met with chiefly from adult life up to old age. The scalp is usually first affected, and the disease spreads thence to the trunk and rest of the body. In the scalp it most commonly shews itself as a faint scaliness on a slightly reddened surface. Sometimes the scales are more yellow and moist, and the scalp may be of a bright red colour. The front and back of the chest may be at the same time covered with the familiar "flannel rash," or lichen circinatus as it used to be called before Duhring's term seborrhœa corporis first called attention to its real nature. Seborrhœic eczema of the scalp and body is usually readily cured with weak sulphur ointments, after a thorough cleansing with some strong soap to remove the greasy scales when these are present. Seborrhœic eczema of scalp usually involves the back of the ears also, and may sometimes be seen spreading as a well defined bright red margin down on to the neck or forehead. It often leads to a rapid fall of the hair, and will eventually cause a serious baldness.

In order to keep these few observations on eczema within moderate limits I have only been able to give a very brief outline of important types of the disease, and am well aware that there are several other types that I have barely mentioned. I have tried also to keep the details of treatment as brief as possible in order not to add to the complexity that already exists in the minds of many with regard to the treatment of the various forms of eczema. The whole pharmacopœia has been exhausted to treat this disease, but it is well to limit ourselves to the use of well tried and familiar drugs, at any rate whenever that is possible, or when they will produce quite as good an effect as more fashionable and vastly more expensive remedies.

LEUCOCYTE ESTIMATIONS IN MALIGNANT DISEASE, TUBERCULOSIS, AND TYPHOID FEVER.

BY JOHN T. HEWETSON, M.D., F.R.C.S.

THE following records are compiled from observations carried out by me with the kind permission of the Honorary Staff at the General Hospital, Birmingham, in the year 1900. They represent the counts made in 39 cases of Malignant Disease, 21 cases of Tuberculosis, and 16 cases of Enteric Fever, and although this is but a limited experience, my results are sufficiently striking to lead me to believe that the conclusions arrived at are, in a measure at least, justified.

CARCINOMA.

Epithelioma.

1.—J. G., æt. 64, male. Epithelioma of leg; verified by microscope.

		Leucocytes per c.m.
June 22nd	...	8240

2.—E. G., æt. 51, male. Epithelioma of tongue; tongue excised two years ago; local recurrence with glandular infection.

June 22nd	...	12640

3.—J. S., æt. 62, male. Large epithelioma of hand; verified by microscope.

July 23rd	...	9520

4.—A. B., adult, male. Epithelioma of lip; two years' duration; no glands.

May 25th	...	5240

Carcinoma of Stomach.

5.—J. P., æt. 62, male. Cancer of stomach; extensive ulceration revealed at the *post-mortem* examination.

July 27th	...	7920

6.—J. G., æt. 30, male. Sent in to Hospital as a case of suppurative appendicitis; a large tender mass to be felt opposite the umbilicus; vomiting.

		Leucocytes per c.m.
Sept. 29th	...	6960
30th	...	6140

Operation revealed a large fixed growth of the pylorus; glandular infection. Absence of leucocytosis is rare in suppurative appendicitis.

Carcinoma of the Œsophagus.

7.—J. W., æt. 25, male. Cancer of œsophagus; six months' duration.

Sept. 12th	...	10240

Carcinoma of Large Intestine.

8.—B. D., æt. 60, male. Cancer of rectum; advanced ulceration; secondary growths.

June 21st	...	19520

9.—L. B., æt. 39, male. Cancer of rectum; advanced cachexia; ulcerating.

June 23rd	...	12960

10th.—C. W., æt. 50, female. Cancer of rectum; one year's duration.

Aug. 3rd	...	6720

Differential count:—

	Per cent.
Polynuclear leucocytes - - -	76
Small lymphocytes - - - -	19
Large lymphocytes - - - -	4
Eosinophiles - - - - -	1

11.—E. A., æt. 50, female. Cancer of rectum; five months' duration.

Aug. 3rd	...	10240

Differential count :—

	Per cent.
Polynuclear finely granular oxyphiles	82
Small lymphocytes	12
Large lymphocytes	2
Eosinophiles	2
Myelocytes	1

12.—C. F., male. Advanced carcinoma of sigmoid flexure.

	Leucocytes per c.m.
Aug. 31st	7120
Sept. 4th	8080

13.—J. B., æt. 64, male. Very advanced carcinoma of rectum; ulcerating.

Aug. 31st	10880
Sept. 3rd	14640

14.—A. G., æt. 29, male. Cancer of rectum; nine months' duration.

Sept. 18th	7760

15.—J. H., æt. 50, male. Cancer of rectum; growth fixed; glandular infection.

Oct. 4th	5920

16.—E. P., æt. 48, female. Maglignant disease of the abdomen, with secondary growths.

Sept. 10th	9040

Carcinoma of Uterus.

17.—S. P., æt. 40. Cancer of cervix; ulcerating; fixed; inoperable.

Aug. 17th	11840
18th	10480

Carcinoma of the Ovary.

18.—M. P. Cancer of the ovary; inoperable; as revealed by laparotomy.

June 14th	10720

19.—A. M., æt. 50. Cancer of ovary; advanced; glands; marked ascites; secondary growths in peritoneum.

		Leucocytes per c.m.
Oct. 15th	...	12800

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	83
Small lymphocytes - - - -	11
Large lymphocytes - - - -	4
Transitional cells - - - -	2

Carcinoma of Liver.

20.—J. M., æt. 50, female. Cancer of liver; excision of breast for scirrhus three years ago; secondary growths in peritoneum.

Sept. 3rd ... 14880
5th ... 10880

Post-mortem.

21.—E. G., adult, female. Movable cancer of gall bladder, as shown by laparotomy.

May 31st ... 7930

Carcinoma of Breast.

22.—A. B., æt. 42, female. Scirrhus of breast.

July 17th ... 8720

23.—E. H., æt. 64, female. Scirrhus of breast.

Aug. 8th ... 12480

24.—J. T., female. Scirrhus; six months.

Aug. 20th ... 8080

25.—J. B., æt. 38, female. Scirrhus; three months' history; glands.

Aug. 22nd ... 4960

26.—A. B., æt. 66, female. Carcinoma of breast; very extensive induration over half of chest; inoperable.

Sept. 6th ... 6960

27.—E. R., æt. 47, female. Encephaloid cancer of breast (microscopic); ulcerating.

		Leucocytes per c.m.
Sept. 4th	...	14640

28.—A. B., æt. 42, female. Encephaloid cancer of breast (microscopic); history of two years.

Oct. 8th	...	5920

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	80
Small lymphocytes - - - -	9
Large lymphocytes - - - -	9
Eosinophiles - - - - -	1
Mast cells - - - - -	1

29.—E. H., æt. 32, female. Scirrhus.

Oct. 13th	...	6800

Rodent Ulcer.

30.—B. C., æt. 70, male. Large rodent ulcer of cheek.

June 12th	...	10400

Conclusions in Carcinoma.—In twenty-nine cases of carcinoma, only nine showed any degree of leucocytosis. My highest count was 19000, obtained in a case of cancer of the rectum. My next highest were three cases of carcinoma of rectum, breast, and liver respectively, giving a count of 14000 per c.m. The remaining five were between 11000 and 13000.

Out of eight cases of rectal carcinoma, three showed a definite leucocytosis. They were all advanced cases in which ulceration was present, and I am not at all sure whether ulceration in this locality where bacterium coli are so plentiful, is not sufficient in itself to account for the leucocytosis present.

In ragged ulceration with sepsis it is very difficult to know how much of the leucocytosis is due to pyogenic matter, and how much to the carcinoma. The differential count shows that the increase is in polynuclear cells, a fact which is not against this septic explanation of leucocytosis in the alimentary canal. Carcinoma in solid viscera and glands, like the mamma, present no such complication, and any leucocytosis present must be fairly ascribed to the growth. It is rather a significant fact that seven out of the nine cases showing leucocytosis were associated either primarily or secondarily with the alimentary canal; the eighth was seen in an ulcerating encephaloid of the breast; the ninth in a one year old scirrhus. Case 5, in which there was extensive ulceration of the stomach gave no leucocytosis. Ulcers of the stomach, even malignant ones, are not so prone to become septic as intestinal ulcers, owing to the antiseptic qualities of the gastric juice.

After reading the literature upon the subject of leucocytosis in carcinoma, I fear that I cannot accept all the conclusions that have been laid down concerning this subject. My observations have entirely failed to prove that the presence or absence of leucocytosis is of much value in the diagnosis of carcinoma, and wherever such uncertainty exists, it is quite impossible to rely upon the leucocyte count for assistance in the diagnosis of such a disease. Leucocytosis may occur, especially in advanced carcinoma, associated with ulceration, but even in advanced stages it may be entirely absent.

Leucocytosis is less rarely seen in cancer than in sarcoma.

If practitioners waited until a general leucocytosis was present before diagnosing carcinoma, it is surely obvious that the operative treatment for such cases would be worse than useless.

SARCOMA.

31.—E. B., æt. 20, female. Sarcoma of ovary; round celled (microscopic examination); inoperable.

		Leucocytes per c.m.
June 11th	...	11680
26th	...	8240

Though an advanced case with secondary deposits in lymphatic glands and peritoneum, there is no definite leucocytosis present.

32.—L. P.—æt. 1½, female. Tender enlarged liver; intense jaundice; is it an abscess, or is it sarcoma?

		Leucocytes per c.m.
Nov. 9th	...	14640

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	61
Small lymphocytes - - - -	34·4
Large lymphocytes - - - -	3
Transitional cells - - - -	1
Eosinophiles - - - - -	·6

Ten nucleated red corpuscles seen whilst counting 500 leucocytes.

Nov. 10th	...	15280

Post-mortem revealed a large round-celled sarcoma of the liver.

This case was admitted on Nov. 9th; for several days her temperature was somewhat elevated. The question of hepatic, or subphrenic abscess was considered. The leucocytosis present is much lower than one would expect to find in a child with suppuration. The differential count, however, is quite sufficient to exclude suppuration, being that of a fairly healthy child of this age. Ten normoblasts were observed during the differential count of 500 white cells. This is largely accounted for by the age of the patient.

33.—S. D., adult, female. Malignant angeioma of the hand; ulcerating.

Aug. 8th	...	11520

The septic ulceration was quite sufficient to account for such a mild degree of leucocytosis.

34.—W. H., æt. 48, male. Round-celled sarcoma of right lung and bronchial glands; right lung absolutely dull to percussion; bronchial breathing, cough for weeks; losing flesh; no hæmoptosis.

	Temp.	Pulse	Resp.	Leucocytes per c.m.
Aug. 20th	101·2	108	32	24320
21st	99·4	108	32	20080
22nd	100	104	32	20880
23rd	100	104	32	20080
29th	101	104	32	20060
Sept. 1st	100·4	104	34	19360
18th	N.	128	36	19760

Died; *post-mortem* revealed a large round-celled sarcoma of the bronchial glands and right lung.

The first count, which is the highest, was taken on the day of admission. The subsequent record gives a remarkably steady rate of leucocytosis. The diagnosis first made was bronchiectasis, but it would be well nigh impossible to obtain such a leucocyte record in bronchiectasis, it would fluctuate according to the degree of retention of the purulent secretion. The next diagnosis made was fibroid phthisis, but here again my leucocyte numeral would not fit in. In phthisis, unless cavitation exists, the blood count is normal, and if a cavity be present the leucocytosis is always a fluctuating one. Empyæma was excluded by introducing an exploring needle into the chest with a negative result. New growth was then suspected, and the steady position of the leucocyte curve, which is a striking feature in this case, was not opposed to that view.

35.—J. C., æt. 26, male. Lympho-sarcoma of mediastinal, axillary and cervical glands; verified by microscopic section.

		Leucocytes per c.m.
June 2nd	...	15720
11th	...	14760
20th	...	21840

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	90
Small lymphocytes - - - -	5·5
Large lymphocytes - - - -	3·5
Eosinophiles - - - - -	1

This case gives a very definite leucocytosis, as one would expect. The case was a very rapid one, and involved several sets of glands. It will be observed that the lymphocytes are considerably decreased in number, and that the leucocytosis is entirely a polynuclear one.

36.—W. A, æt. 7, male. Large osteosarcoma of sacrum, filling up the lower half of the abdomen.

		Leucocytes per c.m.
Oct. 4th	...	8720

On Oct. 21st, patient developed symptoms of peritonitis.

Oct. 25th	...	21840

Differential count :—

	Per cent.
Polynuclear finely granular oxyphiles	94
Small lymphocytes - - - -	3·8
Large lymphocytes - - - -	1·4
Eosinophiles - - - - -	·4
Mast Cells - - - - -	·4

Died Oct. 29th. *Post-mortem* revealed general peritonitis and large osteosarcoma of sacrum.

Though this was a very extensive sarcoma, giving rise to emaciation and cachexia, no leucocytosis is present. When general peritonitis was established, a very definite polynuclear leucocytosis is obvious.

37.—W. H., æt. 21, male. Large spindle-celled sarcoma of scapula.

Aug. 4th	...	4960
5th	...	6560

38.—E. B., æt. 17, male. Mixed-celled sarcoma of femur.

Oct. 30th	...	10240
31st	...	9360

Differential count :—

	Per cent.
Polynuclear finely granular oxyphiles	69·6
Small lymphocytes - - - -	22·8
Large lymphocytes - - - -	6·8
Eosinophiles - - - -	·8

39.—S. S., æt. 25, male. Sarcoma of femur, mixed-celled, of several months' duration.

		Leucocytes per c.m.
Mar. 22nd	...	7600

Conclusions in Sarcoma.—Out of my nine cases, three gave a definite leucocytosis, two out of three were cases of visceral sarcoma, and the third an advanced lymphosarcoma. My four cases of osteosarcoma showed no leucocytosis whatever, one of which was very advanced and of a very malignant type. A mild lymphocytosis existed in one of the cases. The case of sarcoma of the ovary with secondary deposits gave normal quantitative counts. The slight increase of white corpuscles seen in my case of malignant angeioma was in all probability entirely accounted for by the septic condition of the ulceration.

These results are obviously very different to those obtained by Hayem, Alexander, Limbeck, and others. In the majority of their cases a very well marked leucocytosis was found, and they regarded this as sufficiently constant to be of considerable assistance in diagnosis. I regret that my experience is not in accord with theirs, because from the diagnostic point of view my results are very unsatisfactory. A leucocytosis in three out of nine cases is much too inconstant to speak with any decision about the matter. Some of my cases which gave normal leucocyte counts were certainly not rapidly growing, nor advanced; but several of them again were very advanced and very rapid in growth.

Visceral cases and glandular sarcoma seem to me to give rise to increase of leucocytes more constantly than osteosarcomata. There is not, however, anything like the same constancy of leucocytic proliferation as we have seen in suppuration. Two of my cases gave a lymphocytosis rather than a polynuclear leucocytosis. In specially selected cases, given a leucocytosis, it might be of value in pointing to sarcoma, but I cannot help feeling that the absence of leucocytosis does not in the least exclude sarcoma.

I shall work at this subject with considerable interest in future, in order to multiply my records and convince myself of the true relation of leucocytosis to this disease.

TUBERCULOSIS.

Pulmonary Tuberculosis.

1.—W. S., æt. 39, male. Phthisis with cavitation; verified by *post-mortem.*

	Temp.	Pulse	Resp.	Leucocytes per c.m.
July 31st	100·4	100	48	12320
Aug. 7th	102·4	100	38	13440

2.—J. A., æt. 19, male. Phthisis with bronchitis.

Sept. 11th	104	132	48	13440
12th	101	132	50	12560
15th	98·8	132	36	6800

This case had been acutely ill for two days, brought on by a severe chill. He had suffered from a cough for several weeks. The question arising in the physician's mind was, is this pneumonia, or is it bronchitis in a phthisical patient? Consolidated lung giving bronchial breathing was an important feature.

The leucocyte count is very low for such an apparently acute attack of pneumonia, if pneumonia it was, and the leucocytosis present on the first two days, points, I think, to bronchitis rather than to pneumonia. On a stimulating expectorant mixture the bronchitis cleared up in a few days, and a well-marked phthisis was evident.

3.—J. C., æt. 25, male. Phthisis with cavitation.

Oct. 24th	99	—	—	12320

A mild leucocytosis due no doubt to the septic processes going on within the cavity.

4.—C. P., æt. 28, female. Phthisis and tubercular kidney.

Sept. 18th	98·8	—	—	5600

In spite of the great frequency of septic processes associated with tubercle in the organs the count is a normal one.

5.—J. A., æt. 21, female. Phthisis with cavitation.

		Temp.	Pulse	Resp.	Leucocytes per c.m.
Aug.	21st	100·6	—	—	11040
	23rd	100	—	—	13280
	25th	99·6	—	—	9680
Sept.	1st	99·4	—	—	10560
	10th	99	—	—	12480

Tuberculous Nephritis.

6.—J. B., æt. 26, female. Tubercular kidney.

		Leucocytes per c.m.
June 20th	...	9720

Tuberculous Peritonitis.

7.—M. S., æt. 20, female. Tubercular peritonitis, dry stage.

June 23rd ... 8400

8.—S. B., æt. 25, female. Tubercular peritonitis, verified by laparotomy.

June 24th ... 5760

9.—A. B., æt. 9, male. Tuberculous peritonitis.

Jan.	7th	...	8760
	9th	...	5760

This case was thought to be one of appendicitis with suppuration, and it was only upon opening the abdomen that the true nature of the disease was determined.

Tuberculous Adenitis.

10.—A. B., æt. 12, female. Tubercular glands of neck; non-suppurative.

June 30th ... 7920

11.—J. W., æt. 50, male. Large axillary glands.

Oct. 10th ... 5280

Operation; found to be caseous and suppurating.

12.—A. B., æt. 20, female. Extensive tuberculous glands of neck.

	Leucocytes per c.m.
Oct. 24th	7440
Nov. 1st ...	6560

Verified by operation.

Tubercular abscess.

13.—W. P., æt. 27, male. Large lumbar abscess; verified by operation.

Nov. 3rd ...	9680

Operation; about half-a-pint of pus evacuated.

14.—O. P., æt. 21, male. Large tuberculous abscess, from spinal disease.

	Temp.	Pulse	Resp.	Leucocytes per c.m.
Aug. 23rd	100	100	18	8720

Abscess opened; about a pint of pus was evacuated; aërobic cultivations on agar showed no growth after five days.

This abscess was thus free from the common pyogenic organisms.

15.—I. R., æt. 21, female. Large cold abscess in lumbar region.

Aug. 28th	N.	—	—	8760

29th Operation; about half-a-pint of pus was evacuated. Anæsthetics—Gas and ether.

Aug. 30th	100·4	—	—	12640
Sept. 3rd	103	—	—	19040
6th	103	—	—	11200
11th	103	—	—	12640
24th	102·8	—	—	13360

Much discharge; patient looks hectic.

This was a very large abscess, with a normal leucocyte count. There can be no doubt that this was infected at the operation; there was a definite leucocytosis on the day following operation, which was more or less maintained as long as my observations lasted. The temperature and general progress of the patient bore this out to the full.

It is probable that a daily estimation of the leucocytes would be an important guide as to whether tuberculous abscesses, which had been opened, scraped, and closed up again, did become infected by septic organisms, and thus prevent disturbance of the dressing.

16.—M. P., æt. 4, female. Large lumbar abscess, thought to be tubercular.

	Temp.	Pulse	Resp.	Leucocytes per c m.
Sept. 11th	101	—	—	34720
12th	100·2	—	—	25700
15th	97·6	—	—	36800

16th Operation; half-a-pint of pus evacuated. I took cultivations from the pus as it escaped, and obtained a copious growth of staphylococcus pyogenes aureus. Anæsthetic—Ether.

Sept. 17th	N.	—	—	22480
19th	N.	—	—	22800
25th	N.	—	—	16490

Left hospital still discharging.

This case presented all the usual physical conditions of a chronic abscess, and indeed was regarded and treated by the surgeon as such. The very pronounced increase of leucocytes certainly indicated septic infection, and my aërobic cultivations proved this supposition to be correct. The operation consisted of evacuating the pus, scraping out the interior of the abscess gently, and closing it up again. Needless to say in the light of my cultivation results, not to mention the leucocyte counts, the pus re-accumulated and burst out, leaving a gaping wound which was still discharging when my last observation upon the blood was made.

Hip-joint Disease.

17.—W. W., æt. 8, male. Tubercle of hip-joint; two years' history; no suppuration.

July 20th	—	—	—	9520

18.—H. H., æt. 9, male. Tubercle of hip joint; two and a half years; sinuses present.

	Temp.	Pulse	Resp.	Leucocytes per c.m.
July 30th	100	—	—	16240

Aug. 3rd. Amputation at the hip joint. Anæsthetic—A.C.E. mixture. Ether.

Aug. 6th	—	—	—	24240

Died. *Post-mortem*: suppuration high up between the flaps; well marked amyloid disease.

This case had old sinuses present which were no doubt septic, and so accounted for the leucocytosis. The high leucocyte count three days after operation is probably due to the suppuration between the flaps.

19.—W. H., æt. 21, male. Hip-joint disease, with suppuration and sinuses.

Aug. 22nd	—	—	—	20880

Sepsis present with definite leucocytosis.

20.—A. C., æt. 23, male. Hip-joint disease, four years; sinuses with much discharge; well marked waxy disease.

July 30th	N.	—	—	20240

Aug. 2nd. Amputation at hip joint. Anæsthetic—chloroform.

Aug. 23rd	N.	—	—	15920
Sept. 5th	N.	—	—	15920
Oct. 4th	N.	—	—	6200

Patient discharged healed and looking well.

This case was an old one with undoubted waxy degeneration in liver and kidneys. He was emaciated and hectic. His leucocytosis is accounted for by the copious septic discharge. The wound suppurated after the operation. For at least a month subsequent to the operation there was a moderate degree of leucocytosis. On Oct. 4th, the wounds having all healed, we find that his count is a normal one. He became fatter and stronger very rapidly.

This case proves pretty conclusively that getting rid of the sepsis gets rid of the leucocytosis, even though waxy disease be still present.

Caries of Spine.

21.—H. H., adult, male. Caries of spine; large lumbar abscess in region of kidney. Cultivation from interior of abscess gave a rich growth of streptococci.

	Temp.	Pulse	Resp.	Leucocytes per c.m.
Sept. 21st	98·6	112	22	13440
22nd	99	—	—	12800

This case was undoubtedly one of mixed infection.

Conclusions.—Tubercle alone, practically never, excluding a meningitis, produces any increase of the circulating leucocytes. Even large tuberculous collections of pus when free from septic infection fail to produce any reaction upon the leucocyte wave. Tubercular meningitis is said to occasionally cause leucocytosis, but as I have not examined the blood of such cases, I cannot speak with decision upon the point.

Tubercle, plus sepsis, gives a leucocytic increase dependent upon the amount of sepsis present. It is not inconceivable that this fact could be of great value in certain cases, by determining the presence or absence of mixed infection prior to operation, and thus guide the surgeon in his treatment. That it might be of value in the differential diagnosis of tubercle, especially in the kidney, peritoneum, pleura, and other regions, is surely evident.

ENTERIC FEVER.

Uncomplicated.

1.—W. S., æt. 25, male. First week; Widal positive.

	Temp.	Pulse	Resp.	Leucocytes per c m.
Sept. 6th	102·2	130	20	4640

2.—A. B., æt. 37, male. Second week; Widal positive.

Sept. 6th	102·4	120	30	3680

3.—M. H., æt. 32, female. Doubtful case; enteric or pneumonia.

	Temp.	Pulse	Resp.	Leucocyles per c.m.
Sept. 7th	102·4	152	68	3120

I thought it was either enteric or a pneumonia with a bad prognosis; first week, gave a negative Widal.

Sept. 9th	—	—	—	4320
10th	—	—	—	4960
12th	Had a miscarriage; now gives a positive Widal.			
13th	—	—	—	5600

Recovery.

This patient never had any symptoms or physical signs of a pneumonia beyond her rapid breathing. I think her leucocyte record, together with her subsequent progress, quite excludes the possibility of a pneumonia. It is very interesting to observe that even though the patient had a miscarriage, and lost a certain amount of blood, there was no leucocytosis.

4.—A. K., æt. 20, female. Enteric, eight days; Widal positive.

Sept. 8th	102·6	120	32	2480

Symptoms of perforation set in on Sept. 11th, and patient died on Sept. 12th. *Post-mortem:* a very malignant type of typhoid ulceration was present with general peritonitis.

This case illustrates a very well-marked leucopenia, which often exists in typhoid fever. According to Thayer, there is a leucocytosis preceding actual perforation, due to a mild form of local peritonitis. This condition might exist in cases of gradual perforation, but in a case of this kind with malignant ulceration, where more than one ulcer leaked at the same time, I should think it very unlikely that any time could be given for a preliminary leucocytosis. Still it is a question that will be of interest to investigate.

5.—H. C., æt. 10, male. Enteric; Widal positive.

	Temp.	Pulse	Resp.	Leucocytes per c.m.
Sept. 8th	104·2	112	32	5920

6.—G. K., æt. 15, male. Enteric; Widal positive.

Sept. 8th	102	100	32	7920

7.—C. M., æt. 35, male. Enteric, eight days; Widal positive.

Sept. 11th	102	104	22	5280

Died. *Post-mortem* revealed a very malignant form of typhoid ulceration.

8.—E. W., æt. 23, male. Enteric, second week.

Sept. 12th	102·4	100	28	4960

9.—F. W., æt. 40, male. Enteric; Widal positive; second week.

Sept. 14th	100	128	24	7760

10.—F. B., æt. 25, male. Enteric second week.

Oct. 1st	102·8	102	24	4660

11.—E. L., æt. 23, male. Enteric.

Sept. 26th	102·6	105	30	4320

12.—A. B., æt. 12, male. Relapsing enteric; patient had typhoid; temperature been normal ten days; slight discharge from ear. Physician thinks it is middle ear disease.

Sept. 19th	—	—	—	6240

The normal leucocyte numeral is opposed to any middle ear complication. A typhoid rash appeared later.

13.—A. W., æt. 19, male. Second case of relapsing typhoid. Patient had typhoid; temperature been normal several days; temperature beginning to rise with abdominal tenderness. Is it a relapse, or is it abdominal suppuration?

Sept. 21st	103·8	120	28	4000

Such a leucocyte count strengthens the theory of a relapse, and a typical rash appearing later confirms this still further.

Enteric with Complications.

14.—F. C., æt. 18, male. Enteric; Widal positive; thought to have pneumonia as well.

	Temp.	Pulse	Resp.	Leucocytes per c.m.
Oct 1st	103	120	32	4480
6th	101	100	36	5280

My count is quite against the idea of the case being complicated by pneumonia, and the physician in charge could detect no definite physical signs of it.

On Oct. 14th, the patient developed an abscess in his cheek.

Oct. 15th	100	128	36	16240

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	92
Small lymphocytes - - - -	4·4
Large lymphocytes - - - -	2
Mast cells - - - - - -	1·2
Transitional cells - - - -	·4

Abscess opened, one ounce of pus evacuated, which on cultivation gave a fine growth of staphylococcus pyogenes aureus.

Oct. 17th	101·8	120	28	16560
19th	N.	120	32	8400

This case presents one or two points of great interest. The house physician was inclined to think that pneumonia was present as well as typhoid. I examined the blood from that standpoint, and found a leucocyte numeral which militates against the probability of there being pneumonia present. There was later, however, a very definite complication in the form of an acute abscess due to staphylococcic infection. This, as the record shows, produced a very well-marked polynuclear leucocytosis.

15.—H. S., æt. 14, male. Enteric with well-marked acute bronchitis.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 20th	104	112	22	12880

Such a leucocyte numeral as this is very unusual in typhoid fever unless there is a very definite complication.

16.—M. B., æt. 7, female. Enteric; Widal positive; child much emaciated. Perforation three and a half hours before my first count in the early morning of Oct. 6th.

Oct. 6th	101·6	144	36	7120

Differential count—

	Per cent.
Polynuclear finely granular oxyphiles	79
Small lymphocytes - - - -	16
Large lymphocytes - - - -	4·6
Eosinophiles - - - - -	·4

Oct. 7th	98	172	36	19760
8th	96	144	36	18880

Differential count—

	Per cent.
Polynuclear finely granular oxyphiles	89·8
Small lymphocytes - - - -	7·2
Large lymphocytes - - - -	1·6
Transitional cells - - - -	·8
Eosinophiles - - - - -	·6

Oct. 9th	96	96	28	18720
10th	96	104	24	25600
12th	96	120	24	31440
14th	97	112	24	20880
16th	96	116	24	27440
19th	N.	120	24	31200
22nd	96·6	128	30	21260
25th	99·2	128	20	15760
27th	98	104	20	19680
31st	97·4	96	20	15280
Nov. 6th	98	104	28	18080

It will be observed that my first count taken three and a half hours after the perforation is a normal one, both quantitatively and qualitatively. On the following day, a very well-marked leucocytosis is present, which is entirely a polynuclear one. The peritonitis was general, though of a subacute character. The child was very emaciated and dragged on from day to day. An ice bag was kept over the abdomen for days. Operation seemed out of the question as the patient was so weak.

It is of interest to realise that despite the extreme weakness of the child, a very well-marked leucocytosis is to be observed, and this is well maintained to the end of my observations.

The child eventually recovered was discharged from hospital on January 4th, 1901.

Conclusions.—1. Uncomplicated enteric fever produces either a normal, or, as is more usual, a subnormal leucocyte count.

This fact cannot but produce the greatest wonder and speculation as to its true explanation. We cannot explain why typhoid bacillus, influenza bacillus, tubercle bacillus, and the plasmodium malariæ should entirely fail to produce an increase in the number of circulatory white blood corpuscles, whilst most of the other less violent organisms so readily give rise to such an increase. The fact nevertheless remains, and though uninterpretable by us, we cannot help realising that this entire absence of leucocytosis in uncomplicated typhoid fever might be used as an important aid in the differential diagnosis of it from such diseases as pneumonia, scarlet fever, appendicitis and other abdominal inflammations. It can further be of value in cases of relapsing typhoid before the rash appears, when the rise of temperature might be explained in another way, as illustrated in cases 12 and 13. In eight out of my twelve cases of uncomplicated typhoid the leucocyte count was below 5000 per cubic millimetre.

2.—Enteric with complications will give a leucocytosis in accordance with the particular complication.

So that in estimating the leucocytes for a diagnostic purpose the presence of a complication must always be considered.

A NOTE ON AGE AS A FACTOR IN THE ÆTIOLOGY OF LEAD POISONING.

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THE following paper gives an analysis of a series of cases of lead poisoning with especial reference to the bearing of age and length of exposure to the poison on the occurrence of symptoms. The list consists of 83 male cases met with in my out-patient practice, together with a further series of 13 cases taken from the note books of the late Dr. James Russell. In a number of my own cases the information is of a very fragmentary character, as no special interest was taken in them at the time of observation. Latterly I have made more careful enquiries on certain of the points investigated. In addition, I have notes of 23 cases of workers in lead whose complaints cannot be taken with certainty as solely arising from lead, though some connection with their occupation may at least be granted as probable.

The paper deals with male cases only because, although symptoms of lead poisoning are known to occur with greater frequency in women, they are as a rule of a much less definitely recognisable character than those observed in men. Thus, of 17 consecutive female patients working in lead and presenting a well-marked blue line on the gums, only three were suffering from symptoms which were beyond doubt due to their occupation. The remaining patients were all suffering from anæmia and all complained of pains in the abdomen; but, as these complaints are of course extremely common amongst out-patients who do not work in lead, the connection with the poison was a matter of inference only. On the other hand, the symptoms from which the male patients were suffering did not admit of any doubt as to their nature.

With regard to the pathology of the condition, it appears to be acknowledged that in all individuals working in lead, small quantities of the poison are constantly being absorbed through one channel or another, and as constantly excreted, mainly through the bile, urine and saliva. Symptoms of poisoning may therefore depend upon two factors: first, the absolute excreting power of the individual in proportion to the amount of the poison absorbed, and secondly, his relative susceptibility to the effects of the poison. The relative extent of the parts played by these two factors has hardly been satisfactorily determined. It is clear that either the one or the other may be responsible for the remarkable difference displayed by different individuals in their susceptibility to the poison, and in many cases at least, it would seem natural to suppose that some influence may be attributed to both factors together. In the case of elderly men who have been exposed to lead for many years and only fall a victim to its effects in late life, probability would seem to point to failure of excretion as the essential and determining element in causation. Individual susceptibility must probably explain why in one case the alimentary system, in another the nervous system, in a third the kidneys or joints, and in a fourth the general health is especially prone to suffer.

Three of the main factors in ætiology appear to be the sex and age of the worker and the length of time during which he has been exposed to the poison. The especial susceptibility of the female sex has been already alluded to: it is the object of this paper to investigate the two remaining factors and their bearing on one another.

In my series of 96 male cases, the distribution as regards age is as follows. Two lists are given; one representing merely the age at which the patients came under observation, the second that at which the particular attack for which they claimed treatment first began. The total number is smaller in the second list owing to defects in the notes of 22 of the cases.

Age.	No. of cases seen.	No. of commencing attacks.
Under 20	3	2
20 to 29	22	19
30 to 39	28	22
40 to 49	24	20
50 to 59	11	7
Over 60	8	4

These lists merely give some idea of the degree to which attacks of lead poisoning are likely to be met with in the several decades, and suggest that the largest number of cases may be expected between the ages of 30 and 39 inclusive, a result which corresponds with that arrived at by Dr. Oliver in his Goulstonian Lectures. Considering, however, the smaller number of individuals living at the higher ages, and the fact that many workers are obliged by illness to give up their occupation prematurely, it is probable that the figures show an actual and steady increase in susceptibility as age progresses—a result which would seem to support the idea that deterioration of the excreting structures plays a considerable part in the production of symptoms.

A more important point is the age at which the very first symptoms of lead poisoning were experienced. This I am only able to give in 50 cases.

Age at time of first attack.	No. of cases.
18 to 19	6
20 to 29	16
30 to 39	11
40 to 49	13
50 to 59	3
Over 60	1

Here the number of first attacks between the ages of 40 and 49 is very striking, being more than half the total number of cases met with between those ages, and nearly as large as that of the first attacks occurring from 20 to 29. These figures would be most obviously explained by the grouping of lead workers into two classes: the first including those who are naturally or by force of circumstances highly susceptible to the action of the poison, and who therefore get their first attack soon, or comparatively soon, after the beginning of exposure; and the second including those who are naturally resistant to the effects of lead, but whose excreting structures become damaged in the course of time, either by the effects of age or by the constant excretion of small quantities of the poison. But such an explanation assumes an equal length of exposure in all cases, and this is far from being the case. The next table accordingly shows the age at which the present occupation of the patient was first undertaken and the interval which elapsed before the first appearance of symptoms, as well as the actual age at the time of the first attack. The nature of the work is also stated.

Age at beginning work.	Interval before beginning of symptoms.	Age at first attack.	Work.
10	23 yrs.	33	Brassfounder
11	37 ,,	48	Painter
12	36 ,,	48	File cutter
12	38 ,,	50	Tin-plate worker
13	5 ,,	18	Painter
13	6 ,,	19	Glass cutter
13	22 ,,	35	Enamel worker
13	25 ,,	38	Brassworker
13	25 ,,	38	Exposed to lead fumes
13	32 ,,	45	Painter
13	34 ,,	47	Coppersmith
13	35 ,,	48	Tin-plate worker
14	4 ,,	18	Painter
14	5 ,,	19	Glass cutter
14	6 ,,	20	Glass cutter
14	14 ,,	28	Plumber
14	16 ,,	30	Glass cutter
14	16 ,,	30	Tin-plate worker

Age at beginning work.	Interval before beginning of symptoms.	Age at first attack.	Work.
14	17 yrs.	31	Uses melted lead
14	20 ,,	34	Painter
14	30 ,,	44	File cutter
15	3 mos.	15	Painter
15	9 yrs.	24	Painter
15	11 ,,	26	Lapidary
15	20 ,,	35	Wheelwright
15	46 ,,	61	Painter and plumber
16	2 ,,	18	Glazed brick maker
16	12 ,,	28	Plumber
18	7 ,,	25	Painter
18	10 ,,	28	Uses solder
19	3 ,,	22	File cutter
20	10 ,,	30	Painter
21	3 weeks	21	Uses red lead
22	7 yrs.	29	Painter
22	30 ,,	52	Works in carriage works
24	3 mos.	24	Uses red lead
25	3 yrs.	28	Uses red lead
25	12 ,,	37	?
26	Few mos.	26	Painter
26	,,	26	Painter
26	1½ yrs.	28	Painter
27	37 ,,	64	Casts lead patterns
28	3 ,,	31	"Foreign money" maker
29	6 mos.	30	Uses melted lead
30	18 yrs.	48	Filer
33	12 ,,	45	Painter
38	7 ,,	45	Painter
39	Few mos.	39	Uses solder
40	1 week	40	Uses melted lead
40	4 mos.	40	?

If these figures are to be relied on—and it must of course be remembered that some demand is made on the memory in a large number of the cases—some rather striking results are forthcoming. Thus, the 31 patients who first began to work in lead between the ages of 10 and 19 averaged 18·3 years before the first onset of symptoms; the 13 patients in the succeeding decade averaged only 8·1 years; those between the ages of 30 and 39 averaged 9·2 years; and the two patients who began such work at the age of forty succumbed at the end of a week and four months respectively. The shortness of the average intervening period in the second decade appears to be explained by the accidental inclusion of a number of highly susceptible individuals, no less than 5 out of the 13 patients getting their first symptoms within six months of their first exposure to the poison. Substracting these cases, the average interval for the remainder is 13 years. It is further noticeable that in the first decade those who began work youngest went the longest time before the occurrence of symptoms, the average length of the intervening period being 26·4 years for those who started work between the ages of 10 and 13, and 13·1 for those beginning work between 14 and 19. These results are at variance with Dr. Oliver's statement in Professor Clifford Allbutt's System of Medicine, to the effect that "the younger the age the greater the liability to poisoning," though it should be noticed that he adds the words "especially in women." My results seem to show in the clearest manner that there is an increasing susceptibility as age advances, and that the later in life exposure to lead is begun, the shorter, other things being equal, will be the period before the onset of symptoms. The same fact is shown by the following calculation:—In the first decade from 10 to 19, only 3·2 per cent. of the patients succumbed within the first year. In the second decade, the number stands at 38.4 per cent.; in the third, at 25 per cent.; and in the fourth, at 100 per cent. Allowance must of course be made for the early dropping out of those individuals who are especially susceptible to the poison, and it is possible that those who tend to suffer young give up their work at an early stage. Yet, if that were the case, my list of cases ought to include a considerable number of patients under 20 years of age, whilst actually the number of these patients is very small.

The bearing of age is shown in another way. Leaving out the cases in which symptoms occurred in less than a year after the beginning of exposure, the average age of onset of symptoms for those beginning work between the ages of 10 and 19 is 33; the corresponding figure in the second decade is 37·4. In the third decade, which only includes three cases, the average age is a high one, amounting to 46 years, but in the two patients who first began work at the age of 40, symptoms occurred within a few weeks of exposure. These figures seem to show that there are two main factors to be considered, apart from special individual susceptibility: that age is the chief of these, and that susceptibility undoubtedly increases steadily with the advance of age; but that length of exposure plays also a subordinate part in the matter, those who begin work earliest tending to succumb at a somewhat earlier age than those who first expose themselves to the poison at a later stage of life. Workers in lead would thus appear to fall into three groups according to their susceptibility to the poison: first, the abnormally susceptible people who fall a victim within a few months of exposure; secondly, the ordinary individuals who begin work between the ages of 10 and 29 and who succumb at an average age of from 33 to 37, the figure tending to rise with age at time of first exposure; thirdly, the abnormally resistant individuals who either never suffer from symptoms at all, or do so only at an advanced period of life.

No attempt has been made to allow for the varying degrees of precaution adopted for the avoidance of poisoning by the different patients. Inquiries have always been made on the point, but it has appeared to me that no reliance could be placed on the answers obtained. Another important, but again very difficult factor to estimate, is the existence of alcoholism.

With regard to the different occupations, the average age for the first appearance of symptoms in painters was 32·3, 31·8 and 45 in the three successive decades from 10 to 39 (two cases only occurred in the third decade). In file cutters the average age for those beginning work between 10 and 19 was 38: one other patient beginning work at the age of 30 developed symptoms at 48. Five glass cutters beginning work in the first decade first suffered at an average age of 22·8; and three tin-plate workers beginning at similar ages reached the average age of 42·7 before suffering from any ill effects.

A single short table will suffice to show the nature of the first attack, and the relation which it bears to the age of the patients.

Age at first attack.	Colic.	Neuritis.	Constitutional symptoms.	Tremors.
18 & 19	5	0	0	1
20 to 29	13	2	1	0
30 to 39	9	5	0	0
40 to 49	6	7	0	0
Over 50	1	3	0	0

The average interval of exposure for those cases in which the first attack took the form of colic was 9·9 years, that when neuritis was the first effect noticed was 23·5 years. 77·8 per cent. of painters suffered from colic as the first symptom, 60 per cent. of the file cutters, and 62·5 per cent. of the glass cutters.

I have particulars of 19 cases in which more than one attack of lead poisoning occurred. Of these, 7 consisted of repeated attacks of colic only, but in 4 the patients were still young enough to have ample opportunity of developing nervous symptoms later on. In eight other cases the attacks of colic were eventually followed by neuritis. The age at which work was begun does not seem to have any bearing on this point.

The cases which I originally excluded from my notes included instances of epilepsy, glycosuria, chronic Bright's disease and gout. In most of these I have no information concerning the age at which work in lead was begun. I may, however, add that six of the eight gouty patients had begun work between the ages of 11 and 15 years. Most of these had albumen in the urine.

SURGICAL ABSTRACTS.

ORTHOPÆDIC SURGERY.

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TENDON GRAFTING.*

Tendon Grafting in Infantile Paralysis. Fred Eve, F.R.C.S. *British Medical Journal*, 15th October, 1898.

Rules.—Choose the muscle most nearly allied to that of the paralysed muscle or group, because (1) such muscles are nearest, and (2) restoration of voluntary function is more readily obtained. The converse is sometimes advisable, and an antagonist of the paralysed muscle may be selected; thus in paralysis of the tibialis anticus with valgus, the peroneus longus may be attached to the tibialis anticus. Before operation rectify the faulty position by manipulation, splinting, etc.

The method recommended.—The insertion of the tendon to be transplanted, *e.g.*, the tibialis posticus, is exposed by a small incision about an inch in length and the tendon divided; then a similar incision is made over the tendon of the same muscle above the internal malleolus, and the divided tendon pulled through. Next, suppose it is intended to stitch it to the tibialis anticus, an incision is made over the tibialis anticus and the tendon exposed just below the front of the ankle. The skin and fascia intervening between the last incision and that through which the tibialis posticus protruded above the internal malleolus, is tunnelled through by scissors, the free end of the tibialis posticus is pulled through the tunnel and stitched to the tibialis anticus, the foot being first placed in the desired position.

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* For Literature of Tendon Grafting see *Practitioner*, 10th May 1902, page 557.

Method of Uniting.—Split longitudinally the tendon of the paralysed muscle with a tenotomy knife. Draw the divided tendon of non-paralysed muscle through the slit. Union is effected by three or four sutures through both tendons.

Examples of the method where single muscles are paralysed.—The Extensor longus digitorum may be reinforced by the extensor of the longus hallucis and half of the tendon of the tibialis anticus. In paralysis of tibialis anticus, half extensor longus digitorum should be attached to the tibialis anticus, and the former strengthened by suturing to it the peroneus brevis. In talipes calcaneus, the tendo Achillis is shortened, and the peroneus longus is sutured to its outer side. If necessary, the calf muscles are further reinforced by the tibialis posticus and a portion of the flexor longus digitorum, if they are not paralysed.

Eve reported four cases.

The first was a case of foot drop after injury. The tibialis posticus was divided at its insertion and attached just below the ankle to the tendon of the extensor longus digitorum. The tendo Achillis was exposed, and a longitudinal incision having been made towards its outside, the band so separated was divided near its insertion, and, being carried round the fibula just above the external malleolus, was attached to the peroneus longus where it passes along the surface of the os calcis.

In a similar case, due to infantile paralysis, Vulpius attached one-third of the tendo Achillis to the tibialis anticus, one-third to the peroneus longus, while the remainder was elongated to correct equinus.

Eve's second case was a case of paralysis of the peronei and the extensor longus digitorum, causing talipes equino-varus. The tibialis anticus was divided and attached to the peroneus brevis. The tibialis posticus was also divided and carried above the internal malleolus and attached to the extensor longus digitorum.

In the third case, the extensor longus digitorum and tibialis anticus were both paralysed. The tibialis posticus was divided and attached to the tibialis anticus; the peroneus brevis was attached to the extensor longus digitorum. And lastly, the tendo Achillis was lengthened.

The fourth case was a case of equino-valgus from infantile paralysis. The peroneus longus was attached to the extensor longus digitorum, and the peroneus brevis to the tibialis anticus.

Functionsherstellung durch Sehnenverpflanzung. Von Dr. Reichardt. *Berlin Klin. Woch.*, No. 7, 1902.

Technique of Operation.—(1) The non-paralysed tendon need not be divided, but simply stitched to a paralysed one in its neighbourhood. (2) The paralysed tendon may be divided, and the peripheral end stitched to an undivided healthy tendon. (3) Both tendons divided and joined to each other. (4) A non-paralysed tendon may be stitched to the periosteum.

The selection of suitable muscles is made by an examination of their electrical contractility. In difficult cases direct inspection of the muscle belly may be made. Normal muscles are dark red, weak muscles pale red, paralysed ones are fatty and of a waxy yellow colour. Direct faradic examination of the exposed muscles is useful. Long incisions in the skin are recommended to facilitate looking. To avoid frequent operations, many changes of position must be made at one operation. Shortening of tendons may be necessary, and the simplest method is to pass a thread in a purse string fashion through and through the tendon and tighten up.

Indications.—(1) Acute anterior poliomyelitis. (2) Infantile cerebral paralysis. (3) Congenital spastic paralysis. (4) Hæmiplegia. (5) Congenital club foot. (6) Contraction of knee-joint as after chronic synovitis.

The operation has been most frequently performed on the feet. Out of 30 cases, tendon grafting was performed as follows:—In anterior poliomyelitis, 8 times; infantile cerebral paralysis, 9 times; Little's disease, 10 times; hæmiplegia, once; congenital club foot, twice.

Three of these were deformity of the upper extremity, one of the thigh and the rest of the feet. Feet deformities were: 10 spastic equino-varus; 5 paralytic equino-varus; 5 spastic equinus; 3 paralytic calcaneus; 1 paralytic valgus; and 2 congenital equino-varus.

Ersatz des Gelähmten Quadriceps Femoris durch die Flexeren des Unterschenkels. Von Prof. Dr. F. Krause, of Berlin, *Deutsch. Med. Woch.*, 13th and 20th Feb., 1902.

This was a case of anterior poliomyelitis with paralysis of the quadriceps extensor of the right leg. The onset of the illness occurred at the age of one year, and the patient came under Prof. Krause's treatment at the age of 15 years. The knee of the paralysed side was flexed to 110°. There was paralysis of the quadriceps, and slightly of the sartorius. Of the flexors, the biceps acted most powerfully; the semi-membranosus and semi-tendinosus acted less powerfully, both of the latter acted voluntarily. The patient stood on the right leg by pressing the thigh back with his hand.

The paralysed extensors were replaced by the non-paralysed flexors, leaving the gastrocnemius and the popliteus to flex the knee-joint. Through a posterior incision of 17 cms., which passed up the thigh from the centre of the popliteal space, the flexors were exposed. The tendon of the biceps was isolated upwards to nearly the middle of the thigh exposing the short head, downwards to its insertion, and there divided close to the bone. A second incision was made on the front of the thigh passing upwards 17 cms. from the knee-joint, and the quadriceps extensor was exposed. About the height to which the biceps had been exposed on the flexor aspect, the vastus extensor was separated close to the periosteum from the outer side of the femur, and an opening of about a hand's breadth made, through which the biceps was without difficulty pushed, and provisionally stitched to the quadriceps.

The gracilis, semi-tendinosus, and semi-membranosus were similarly divided at their insertions through the posterior incision and freed upwards. The gracilis was in good condition; the other two muscles were rather atrophied. An incision was made in the middle of the thigh through the centre of the vastus internus about a hand's breadth in length, and through this the three muscles were brought. The sartorius was isolated in its lower segment through the anterior incision, and freed from its insertion into the tibia. The posterior incision was now closed. The quadriceps tendon was too atrophied to be of any use for stitching purposes, and the patella had to be used for this purpose. The biceps was fixed to the upper and outer edge of the patella; on the upper and inner edge, from without inwards, the sartorius, the gracilis, semi-membranosus and semi-tendinosus were next fixed. Catgut sutures were put through the patella without implicating its posterior surface. The muscle bellies were next sutured together for a length of 4½ cms. from the patella. The fascia lata was stitched over this, and then the skin. In seven weeks the child could extend the leg nearly to the straight line, after it had been passively flexed to 135°. Three months after the operation he could walk without any apparatus. Eight months after the operation he had for some weeks walked like a healthy person, and could bend the knee slightly.

The important points in the operation are: (1) the suturing of the tendons to the patella, not to the quadriceps which would stretch; (2) the muscles were cut close to their insertion, and so were long enough to easily reach their new positions.

REVIEWS.

A MANUAL OF SURGICAL TREATMENT.*

This volume of Messrs. Cheyne and Burghard's Manual contains accounts of the treatment of the surgical affections of the tongue, pharynx, œsophagus, stomach, and intestines.

Mr. Watson Cheyne has written so much on cancer of the tongue and pharynx that his views on the subject are already widely known and generally accepted. It is interesting to note that it is, in his opinion, not necessary in the early stages, at any rate, of cancer of the tongue to remove the tissues between the tongue and the infected glands; as the lymphatic channels remain free from accumulations of cancer cells, though the glands may be infected. The description of the operation for clearing the glands away is concise and clear, but we are inclined to think that the operation is made to appear easier than it really is. As regards pharyngeal carcinoma, the thorough operations before described by Mr. Watson Cheyne are recommended.

In the section on the Surgical Affections of the Abdomen the first subject dealt with is that of traumatic affections, and stress is rightly laid on the difficulty of diagnosing whether, in a case of abdominal contusion, there is a visceral injury or not. This is a problem always difficult of solution; but there is one point of which no mention is made by the authors, and that is the value of marked rigidity of the abdominal wall as a sign strongly suggestive of the presence of a visceral injury. Rigidity is more valuable as a sign in these cases than is distension, for it appears earlier, and so at a time when operation is more likely to be effectual.

The chapters on Surgical Diseases of the Stomach are excellent. The directions given are full and practical, while the subject, not an easy one, is discussed in a most able manner.

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* A Manual of Surgical Treatment. By W. Watson Cheyne and F. F. Burghard. Part VI, Section 1. London: Longmans, Green & Co. 1902.

In writing about intestinal obstruction, the importance of emptying the distended coils of intestine at the time of operation is insisted upon. It was, we believe, the late Mr. Greig Smith who first insisted on the importance of this step; though the late Mr. Lawson Tait had previously recognised the advisability of the measure, and in one case, at all events, had practised it.

Of all surgical subjects that of appendicitis seems to have been written about more than any other in the last few years, but there are so many debatable questions in connection with it that it is always interesting to hear the views of any surgeon who has had a large experience of the disease. Messrs. Cheyne and Burghard take a course midway between the ultra-conservative line of practice and that advocated, especially by American surgeons, viz., to operate directly the diagnosis of appendicitis has been made. Thus, they hold that in relapsing cases the interval operation is to be preferred, and that in abscess cases it is best simply to evacuate the pus, and not to remove the appendix. We cannot quite agree with the authors when they say that after the wound in a case of suppurative appendicitis has healed it is well to re-open the abdomen, with the two-fold object of removing the appendix and of repairing the abdominal wall. Removal of the appendix under these circumstance is difficult; and relapses are so infrequent, that it seems hardly necessary to put the patient to the risk of what must always be a formidable operation.

It is impossible to discuss in detail all the subjects dealt with in this volume. It is only necessary to say that this part of Messrs. Cheyne and Burghard's work surpasses, if possible, its predecessors as a most valuable addition to surgical literature

TUBERCULOSIS AS A DISEASE OF THE MASSES, AND HOW TO COMBAT IT.*

At a meeting of the "International Congress for the Study of the Best Way to Combat Tuberculosis as a Disease of the Masses," held at Berlin in 1899, a prize was offered for the best essay dealing with the subject under discussion. This prize was gained by Dr. S. A. Knopf of New York, and an edition slightly adapted to the social conditions especially met with in England has been prepared by Dr. J. M. Barbour and published by Messrs. Rebman. We are somewhat in doubt as to the extent of the welcome which is to be accorded to it. It is in all respects a truly admirable statement of all that should be known by those who have to deal and come into contact with consumption. For the use therefore of the friends of consumptive patients we cannot too highly recommend the essay. It contains also an immense deal, a knowledge of which is essential for the patient himself. He must, for example, be impressed with his power of spreading infection and with the precautions necessary in order to avoid the danger. And there is further much wise advice which in his own interest he will do well to follow. Yet we must confess that we should hesitate to place any such book in the hands of a consumptive patient, for we cannot forget that he is as a rule a morbidly-minded individual, and that habits of intense self-observation are one of the obstacles to progress against which physicians have to fight.

There is another class of people amongst whom we are not anxious to disseminate this class of literature: though in this we are undoubtedly at variance with many members of the medical profession. We refer to the general non-consumptive public, whose interest in the subject has been greatly aroused of late, and many of whom are accustoming themselves to the amateur study of consumption and its natural history. We greatly doubt the advisability of ministering to this tendency, and we think that we have already seen for ourselves some indication of the mischief which may arise in nervous people from too great an insistence on the dangers of tubercular infection. By all means let such books as that which we are reviewing be placed in the hands of those who are especially exposed to intercourse with consumptive individuals, and above all let it be the recognised duty of every medical man who has to treat such a case to see that both the patient and his friends are fully provided with all information which it is to their advantage to possess. But we would for our own part do nothing to encourage the further spread of literature of this sort amongst the general public.

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*Tuberculosis as a Disease of the Masses, and how to Combat It. Prize Essay by S. A. Knopf, M.D. Adapted for use in England by J. M. Barbour, M.B. London: Rebman, Limited. 1902.

We have recently given some offence to an author by the expression of these opinions, and we have taken the opportunity of repeating them, not only because we believe in their truth, but also in order to show that our former review had no personal direction. In the case of this book, we wish to conclude by again expressing our belief that no more admirable summary of the popular aspect of the subject could well have been written.

MEDICAL ETHICS: A GUIDE TO PROFESSIONAL CONDUCT.*

In drawing up a rational and moderate statement of the rules which should guide professional conduct, Dr. Saundby has done good service both to the public and to the medical profession. The task must have been one of very considerable difficulty, for it involves to no small extent an endeavour to reconcile conflicting interests. Hence it is probably too much to expect that the decisions arrived at will in all cases give satisfaction to everybody. But although individuals are certain to differ over some of the points of the text, there can hardly be two opinions as to the aim with which the book has been written. Everyone must at least acknowledge that a most admirable attempt has been made to deal fairly and justly with the various problems discussed.

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* Medical Ethics : a Guide to Professional Conduct. By Robert Saundby, M.D. Edin., Hon. LL.D. McGill, F.R.C.P., Professor of Medicine in the University of Birmingham, Physician to the General Hospital. Bristol : John Wright & Co. 1902.

For our own part, we must confess that we are wholly satisfied to follow the rules laid down in this book; and they appear to us to decide with great fairness between the various interests at stake. Throughout its pages, it is, as it seems to us, tacitly admitted that one of the chief points to be considered in any code of medical ethics is the interests of the public whose lives and health depend upon the honesty of those to whose hands they are entrusted; and that where the selfish interests of the profession clash with the higher interests of their patients, it is in favour of the latter that the decision must go. At the same time there is no failure to recognise the undoubted fact that, so long as the medical profession is made up of ordinary human beings who have entered that profession for the main purpose of earning a livelihood, a fair consideration of their own interests is not only not incompatible with, but is actually essential for the proper protection of the public. It is therefore in no narrow spirit of trades-unionism that Dr. Saundby's book has been written: indeed we rather fancy that it will hardly be thought to go far enough in this direction in some quarters.

Dr. Saundby has not hesitated to take up a strong position on some points which have hitherto been hotly debated. His attitude with regard to consultation with homæopaths is a bold one, but we find ourselves in entire agreement with the contention that boycotting should not be adopted in respect of medical opinions honestly held. Again, his decision that in many cases it is legitimate for medical practitioners to go to the assistance of midwives seems based on broadminded common sense, but must of course be taken in conjunction with the conditions laid down in the text. The section on the delicate relations existing between patients, general practitioners and consultants, also seems to us to entirely meet the difficulties of the question, as far as can be expected of any academic statement. In conclusion, we should like to call attention to one small paragraph to which perhaps greater prominence might with advantage have been given. It runs as follows:—"It is a question whether alcohol ought ever to be prescribed to women, and especially young women, for the relief of pain; and, when ordered for other purposes, this should only be done after careful consideration." We doubt whether the book contains any more important paragraph, and we are certain that if this advice is followed in practice by the medical profession as a whole, there will be a very appreciable diminution in the prevalence of female alcoholism.

CONTRIBUTIONS TO PRACTICAL MEDICINE.*

This edition of Sir James Sawyer's Contributions to Clinical Medicine contains some additional matter. Thus the first chapter—"The Causes of Insomnia"—appeared in the *British Medical Journal* of Dec. 1st, 1900, and the following section on treatment was published the following week. Both contain some suggestions that may be of use to the reader. Sir James Sawyer's article on Floating Kidney is interesting. We agree with his condemnation of padded belts, but in equally strong terms the author condemns the "serious surgical operation with the object of fixing the erring organ by stitches to its normal bed," and this "when they think a floating kidney is the seat of pain which calls for surgical interference." Here we are unable to follow the author, the more so as he says he has never met with such a case in practice. We have more than once seen cases in which pain was a stern reality for the patient, and where the not very serious operation of stitching the erring organ (to use the author's expression) to the twelfth rib was followed by the most satisfactory results. Further on Sir James Sawyer says that "a structurally healthy kidney, which is floating, is the only clinical condition which I do not diagnose." We rather gather from the context that this is why the writer has not met with a case in which pain is severe enough to call for operative procedures. The author stops his examination when he finds it leading him to such a diagnosis. Surely a physician or surgeon with the interest and welfare of the patient at heart is in duty bound to satisfy himself as to the existence or otherwise of any morbid condition, and we have always believed that this may be done without drawing the attention of the patient to his or her disease so as to frighten them. We must own to dissenting strongly from the last two words of the author's chapter on Floating Kidney, viz., "practically negligible."

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* Contributions to Practical Medicine. By Sir James Sawyer. Third Edition. Birmingham: Cornish Brothers.

Section xiii. treats of the cure of chorea by large doses of arsenic. Without referring to other points in this chapter as space forbids, we may say that large doses of arsenic have been used by some practitioners in different parts of the country for many years, and it has been said that the dose should be large from the first, not gradually worked up. This is of course a matter of opinion. Probably, Sir James Sawyer did not see fit to mention the fact. We believe that the most striking cases of rapid subsidence of choreic movements with which we are acquainted have been those treated vigorously with large doses of liq. arsenicalis (♏xv.–xviii.) from the first, the drug being suspended at the end of a week. Some of the other sections contain sound practical hints of which we fully acknowledge the value, although we cannot agree with the author in all his conclusions.

MANUEL D'HISTOLOGIE PATHOLOGIQUE.*

In the March number of the Review, 1901, we drew attention to Vol. I. of the well-known Manual of Pathological Histology by Cornil and Ranvier, which is now appearing in its 3rd edition.

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* Manuel d'Histologie Pathologique. Profs. Cornil and Ranvier. Vol. II. Paris: Félix Alcan, 108, Boulevard St. Germain.

We have recently received Vol. II, which contains Parts iii., iv., and v. of the whole work. The first of these is on the Pathological Anatomy of the Muscles and is written by Dr. G. Durant. This section forms in itself a monograph on a subject which has perhaps not received exhaustive treatment as a whole, though many portions of the subject, such as degenerations, myocitis osificans, and the changes met with as the result of lesions of the nervous system are familiar to all workers. Durant who has made a profound study of this subject unites all the available information enhanced by his own valuable observations. Part iv. treats of the Blood and Hæmatopoiesis. The writers are Drs. J. Jolly and H. Dominici. The plan followed is to describe firstly the alterations in the elements of the blood, different forms of anæmia, such as chlorosis, pernicious anæmia, etc., alterations in the white corpuscles, and lastly, alterations of the plasma and serum. Section ii. of part iv. is devoted to the study of bone marrow and the blood as a tissue. It contains most valuable information, and no work with which we are acquainted so far, gives such a full and consecutive description of the morbid anatomy of bone marrow. The illustrations in both sections add considerably to the practical value of the work. The best portion of Vol. VI. is on the Pathological Histology of the Central Nervous System, and is written by Drs. Gombault and Philippe, names that are in themselves a guarantee of the excellence of the article. This part is divided into five sections, viz., nerve cells; nerve fibres; neuroglia cells and fibres, and the connective tissues generally of the central nervous system; vessels and peri-vascular connective tissues; and lastly, the meninges. A minute description of technical methods is appended. Here again, we have to note the many beautiful and accurate illustrations, the careful colouring and execution of which must go far to assist the investigator. As we remarked in reviewing Vol. I., the 3rd edition of "Cornil and Ranvier" will be the standard work on the subject of morbid histology. In fact the work now appears as a system of pathological anatomy, since the different subjects have been entrusted to various writers all working under the supervision of the original authors.

PROTOPLASM: ITS ORIGIN, VARIETIES AND FUNCTIONS.*

This is a thoughtful little paper on some very large subjects. One of its chief ideas is that motion is innate in the atoms of primitive matter. But we fear that the "riddle" of the Universe is not even yet "solved," and that some of the "mystery" yet remains. Nevertheless, Dr. Hayward's paper is a good one.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

THE Denver Chemical Manufacturing Co. send us a sample of their product Antiphlogistine. This is a substance of thick paste like consistence containing various antiseptic drugs. The vehicle is, according to the analysis of the *Lancet*, a "very pure clay or silicate." It appears to be a comfortable and useful application for inflamed surfaces, ulcers, etc.

We have also received from Messrs. Cadbury specimens of Milk Chocolate, made from high class cocoa, loaf sugar and "full cream fresh milk." The analysis shows that it contains 30·3 per cent of fat, 52·9 per cent. of cane and milk sugar, and 10·3 per cent. of proteids or albuminoids. Sugar is therefore present in somewhat smaller proportion than in ordinary plain chocolate, and is partly in the form of milk sugar. It is further pointed out that a considerable portion of the cocoa butter is replaced by milk fat. No preservatives are used. The flavour is extremely pleasant, and there can be no doubt that the product has a very considerable food value.

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* Protoplasm: its Origin, Varieties and Functions. By John W. Hayward, M.D. Bristol: John Wright & Co. 1902.

New Books, etc., Received.

From Cassell and Company, Limited—

A Manual of Medical Treatment or Clinical Therapeutics. By I. Burney Yeo, M.D., F.R.C.P. New and Revised edition.

From H. K. Lewis—

The Etiology of Typhoid Fever and its Prevention, being the Milroy Lectures delivered at the Royal College of Physicians in 1902. By W. H. Corfield, M.A., M.D. Oxon., F.R.C.P.

Hygiene and Public Health. By Louis Parkes, M.D., D.P.H. Lond. Univ., and Henry Kenwood, M.B., D.P.H., F.C.S. Second edition.

From Cornish Brothers—

The Treatment of Abortion. By John W. Taylor, F.R.C.S.

From The Scientific Press, Limited—

Ophthalmic Nursing. By Sydney Stephenson, M.B., C.M., F.R.C.S.E. Second edition.

We have also to acknowledge the following—

Introductory Lecture to the Course of Gynæcology, Birmingham University. Professor J. W. Taylor, F.R.C.S.

Über Hämoglobinverlust und Hämoglobinersatz. Von L. Fürst.

Report on Observations made upon the Cattle at the Experimental Station at Outremont, P.Q., recognised to be Tuberculous by the Tuberculin Test. By Professor J. George Adami, M.A., M.D., and C. F. Martin, M.D.

Tuberculosis in Cattle: its Relation to our Meat and Milk Supply. By Norman Hay Forbes, F.R.C.S. Edin.

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THE

BIRMINGHAM MEDICAL REVIEW.

NOVEMBER, 1902.

ORIGINAL COMMUNICATIONS.

HABITUAL CONSTIPATION IN INFANCY.

BY WALTER R. JORDAN, M.D.,
EXTRA-ACTING PHYSICIAN TO THE BIRMINGHAM AND MIDLAND FREE HOSPITAL FOR SICK CHILDREN.

It is perhaps reasonable to assess the general importance of any morbid condition according to the product of its frequency and its mortality. Of the prevalence of constipation in general no one is permitted to be ignorant; a protracted attendance on out-patients at a Children's Hospital is more than sufficient to ensure recognition of its relative frequency in infants; indeed, one has to guard against the idea developing into an obsession. The mortality of the condition it is not so easy to ascertain; probably few deaths are attributed directly to constipation. The name is not one of those that head a column in the tables of deaths among infants furnished in the reports of the Registrar-General. Indeed we may be told in a phrase once popular that it is not a disease but a symptom. Phrases have their day, and this, perhaps, loses much of its force with a generation that is instructed that there is no such thing as a disease, only a condition of the body other than that of health. But symptom, disease, or condition, there is no doubt that among the deaths attributed to diarrhœal diseases, dentition, other diseases of the digestive organs, convulsions and diseases of the nervous system, tabes mesenterica, atrophy—headings which do occur in the reports referred to—many a one has really been determined by the continued existence of a state of constipation. In some cases, had the constipation been overcome the assigned cause of death had never supervened; in others, the relief of the constipation had been the one more thing needed to bring about the cure of the disease quite rightly given as the cause of death.

Frequency and danger, therefore, combine to render constipation in infants a condition which it is highly important to detect and to remove. It is a primary necessity to have a clear idea of what constitutes constipation, and we may define it as a condition in which fæcal matter is retained in the bowel after it should have been passed out and causes injury to health. There is consequently every variation in degree, from absolute failure to evacuate the bowel with impaction of fæces and imminent danger of death from intestinal obstruction to a slight relative infrequency. In a healthy child a few days after birth the fæces are bright yellow, uniform in consistence and like thick soup, and almost without smell. It is only towards the end of the second year that the motions become formed and begin to resemble in colour and odour those of adults. The weight of fæces evacuated daily by an infant at the breast is 2·8 ozs., the average for an adult being 5·9 ozs. (Bouchaud). The number of motions daily should be at first two to four, later one to two. In infants, therefore, constipation is present and requires treatment if there be but one motion of the bowels in the twenty-four hours, however regularly this may take place; if the motion or motions be described by the parent or nurse as at all hard the constipation may be considered marked. It is not always possible to inspect the motions personally, and, while parents are very ready to call attention to the more extreme degrees of constipation, they are not awake to the importance of the minor degrees. One motion per diem in an infant they regard as satisfactory. To detect constipation therefore questioning must be rigid and exact. To ask if the child's bowels are moved regularly is not enough. We must ascertain precisely the frequency of defæcation and the appearance of the fæces. The detection of the condition should then be certain, and our questions on the latter point will also enable us to avoid a very possible error. In a world where skim-milk masquerades as cream, it is perhaps not surprising to find constipation presenting itself in the guise of diarrhœa. Just as retention of urine may express itself by frequent dribbling, or lurk behind periodic evacuations, so retention of fæces may give rise to what may be called spurious diarrhœa. There are in such cases frequent small evacuations, the stools being thin and watery with occasional small hard scybala. Examination of the rectum with the little finger justifies or allays the suspicions excited by the description of the fæces in a moment.

An actual temporary diarrhœa may follow and be due to constipation. The accumulation of fæces is tolerated for a considerable time, but finally causes irritation of the intestine which leads to evacuation of the bowel. This evacuation may be complete or only partial; in either case it is again succeeded by retention of fæces. It is of infants so affected that we are told that their bowels are either all one way or all the other. What we have to note is that the condition which is fundamental and requires treatment is the constipation; the occasional safety-valve diarrhœa, while it must be closely watched lest it become excessive and endanger the life of a feeble infant, should be rather aided than checked.

While prepared to detect constipation even behind the presence of the opposite condition, we have to recognise that there is a form of constipation which is apparent only. Young infants may be found to have a movement only every two or three days, the amount of fæces discharged being very small. The babies are emaciated, and the scanty motions seem to be due to lack of food, the apparent constipation being soon relieved by the supply of a proper amount of nourishment.

Apart from those indications of constipation furnished by the character of the fæces and the frequency and facility or otherwise of their passage, the general symptoms of the condition are well-known—the pasty, dull complexion, the bluish lips, the fretfulness during the day, the restlessness and disturbed sleep at night, the cold hands and feet, the flatulence and swelling of the belly.

More marked consequences of the condition are attacks of violent colic, convulsions, pyrexia, auto-intoxication, hernia, vomiting, atrophy. All these demand close inquiry into the working of the intestines.

But I propose to dwell only upon two symptoms as particularly suggestive of a minor degree of constipation. I say a minor degree, because it is of the less marked cases that I am thinking now. The severe cases attract and receive proper attention; it is only the less marked in which sufficient importance is not attached to the presence of constipation, and consequently no special care taken to determine its presence.

The first of these symptoms is crying. An infant takes its food, retains it, even appears to do fairly well on it, is not obviously flabby, has an abdomen apparently normal, but is always crying. In nine cases out of ten at least a child thus presented to us is suffering from constipation, and gradually becomes contented and happy as this is relieved by treatment. If, however, the hint is not regarded and no great care is taken to elicit by searching questioning the presence of a slight degree of constipation, the condition deepens, the severer symptoms develope, and the health of the child is dangerously affected.

The other symptom is lack of desire for food. The healthy interest in food disappears almost entirely in the case of many infants suffering from habitual constipation, and there is great difficulty in persuading them to take sufficient nourishment. The complaint that a baby cannot be got to take anything should always excite suspicion of undue fæcal retention.

A consideration of the causes of constipation rightly precedes any remarks on treatment.

Anatomical lesions, such as atresia of the anus, give rise to an entirely different condition from that of habitual constipation in minor degree with which I am chiefly concerned to-night. But the presence of such lesions as the one named, incarcerated hernia, abdominal tumours must be excluded as far as possible by careful palpation of the abdomen and digital examination of the rectum. These methods will also often reveal the presence of fæcal masses in the descending colon and sigmoid flexure and in the rectum itself. This marks a degree of constipation which may be immediately dangerous. The fæcal masses may become actually impacted, causing complete intestinal obstruction and necessitating drastic and vigorous treatment.

Lesions such as fissure or ulcer of the anus, and to a less degree even the painful distension of the sphincter entailed by costive motions, may give rise to so much pain on defæcation that the infant instinctively restrains the actions of the bowels as long as possible, thereby intensifying the condition that is the cause of his sufferings.

But quite apart from malformation or painful lesion we find normally in the infant at birth, as compared with the adult, a much greater proportionate length of intestine, especially of the large intestine. The ascending colon is short, and the surplus of length is found in the descending colon, and particularly the sigmoid flexure, which exhibits much more complicated folds than in the adult. These anatomical peculiarities retard the movement of the intestinal contents and facilitate the absorption of fluids, whereby the fæces are rendered solid. So that a special liability to constipation is entailed by the very form of the infantile bowel.

A frequent element in the production of constipation is the induction of an intestinal catarrh with hyper-secretion of mucus. This may be the result either of the giving of improper food, especially an excess of starch, or of exposure to cold.

The readiness with which fluid is absorbed by the long large intestine of infants must lead to excessive dryness of the fæces, if either there is a deficient supply of fluid by the mouth, or there is an excessive loss of fluid from the skin or kidneys. These dry fæces the infant is unwilling and ultimately unable to discharge.

Deficiency of peristaltic action quickly follows on retention of fæces from any other cause. The bowels soon become accustomed to overloading, and the muscle, if once balked, soon ceases to re-act to the stimulus of the contents of the intestine. This deficient peristalsis, which intensifies constipation otherwise initiated, may be itself the result of diseases and cause constipation to appear as a secondary symptom in their course. Thus it occurs in rickets as part of the general muscular debility, in food atrophy, as a sequel of typhoid fever, chronic diarrhœa, acute rheumatism, or ulceration of the intestine, and in cerebral disease.

In infants at the breast, constipation may be associated with the existence of a similar condition in the mother, and the introduction into her diet of laxatives such as oatmeal porridge and treacle, stewed fruit, baked apples, prunes, figs, etc., may be sufficient to remedy the condition in the infant.

A cause of constipation which it is still worth while to mention is the administration of opium in some form or other for the purpose of keeping the child quiet. The unscrupulous nurse is not yet extinct, and such things are done. Indeed greater knowledge, which our nurses certainly have nowadays, is to reckless minds only greater opportunity.

In the treatment of constipation we have two aims to achieve: first, the immediate relief of the loaded bowel; second, the cure of the tendency to constipation. The mistake is sometimes made of attending to the first but not taking thoroughly in hand the second, which demands time, pains, and the co-operation of doctor and mother or nurse. In the domestic treatment of constipation we find that it is the common error, as we should expect, totally to disregard the causes of the condition and to treat it by purely opportunist methods.

We may take it that, while the slightest degrees of habitual constipation are not recognised as such by the parent at all, whenever it is thought that the child's bowels are not sufficiently moved, a dose of castor oil and syrup of rhubarb is administered. The result is the desired evacuation of the lower bowel, and the immediate relapse into the constipated state. Then more castor oil, until the patience of the parent is exhausted and medical advice is sought. If there is a drug that should not be given in habitual constipation that drug is castor oil. It has a definite constipating effect following its cathartic action. It is useful to clear out the bowel on some special occasion, where the object is the expulsion of irritating and fermenting material from the intestines, as in some cases of dyspepsia and diarrhœa, but for the reason given its use in constipation is not to be thought of. With a similarly short-sighted aim enemata of water, with soap or glycerine, suppositories or injections of glycerine, or soap suppositories are used. These measures can only achieve an isolated evacuation of the bowels.

So much more important of the two aims of treatment is the cure of the evil habit that I will deal with it first.

The causes of habitual constipation indicate that treatment to be permanently successful must be undertaken on dietetic and generally hygienic lines, aided if necessary by the exhibition of suitable drugs.

Where the constipation results from an excess of starch in the food, this excess must immediately be withdrawn. No unconverted starch at all should be given, of course, to an infant under six months of age, and if it has been given it may only be necessary to stop this to relieve the constipation.

We may find that there is too much casein in the diet, as in the case where cow's milk is insufficiently diluted; the reduction of this may be all that is needed.

Insufficiency of sugar in artificial feeding must be much less frequent, but when it does occur is very readily remedied. In infants at the breast, a teaspoonful of syrup given occasionally, immediately before nursing, will often secure regular and satisfactory movement of the bowels.

A deficiency of fat in the diet is one of the most common faults in artificial feeding, and is by no means an uncommon defect when the child is breast-fed. The substitution of a food which contains a due proportion of fat, or in the case of breast-fed infants the administration immediately before suckling of a teaspoonful or less of raw cream, may rectify the constipation.

A simple remedy often in itself sufficient to obviate constipation is water. It is not yet customary for infants to be given water simply as a drink; their food is so fluid that it is not suspected that they can ever be thirsty. Probably, however, infants often suffer from want of water, especially when they are subject to excessive perspiration. In such cases the motions are dry and infrequent, and the urine also is high-coloured and scanty, and described as scalding the child. Boiled, filtered water should be given to infants practically from the first. Where the baby is restless, or cries, and it is not time for feeding, nor is there any obvious cause of irritation, a tea-spoonful of water may be given, and this should be repeated several times a day. A little sugar will sometimes make the drink more acceptable, or slightly sweetened lemon-water may be used. If the drinking water of the district is very hard distilled water must be given. Children over six months may be encouraged to acquire the art of drinking from a glass. This extra supply of fluid will often materially assist digestion, act as a diuretic and prevent constipation.

The general treatment of constipation includes all hygienic measures suitable to the age, whereby the general tone of the tissues and organs may be improved and health maintained. Taking out in the open air as long as possible in the day time, proper ventilation of rooms both by day and night, warmth and light indoors, bathing, and cleanliness in everything, all these make for vigorous babies.

Clothing is most important, as insufficient or wrongly distributed clothing is a fruitful source of intestinal catarrh. The abdomen and the whole of the lower limbs must be clothed in flannel as much as, if not rather more than, the chest, which is so often cumbered in its working by superimposed layers of garments. Upon the trunk the clothing should be distinctly loose, both for comfort and for warmth.

Another item of general management with a view to prevent constipation is the encouragement from the earliest age of habits of regularity. Regular feeding tends to regular action of the bowels, and the mother may by watchfulness anticipate the expected action, and by "holding out" foster the acquirement of cleanly habits at a surprisingly early age.

The stimulation of peristaltic action by massage or kneading of the abdomen is extremely useful in the treatment of constipation. Rather superficial friction with the palm of the hand may be alternated with deeper kneading with the ball of the thumb, both movements beginning in the right iliac fossa and following the course of the colon. The manipulations should last for five minutes in the morning, and again in the evening. Rubbing may be with the hand only, or oil may be used, and if the skin is dry should be used.

In many cases one or other of these dietetic and general measures suffices, but many infants are constipated even when the details of their environment are all that could be desired. In these obstinate cases, and even in cases of minor degree in order to get a start, treatment by drugs must be added to our methods. As has been said purgatives of anything like a drastic nature are entirely out of place. We want to give the least possible amount of medicine, just enough to incline the balance of forces with certainty to the obtaining of the requisite daily number of evacuations. We want, also, drugs which will not lose their effect, but will, on the contrary, promote the normal action of the bowels, so that they may gradually be lessened in dose, and ultimately withdrawn.

For these purposes I prefer salines, and commonly employ a combination of magnesia and magnesia sulphate, giving 2 grains of the former and 8 of the latter three times a day to infants over six months, half these quantities three or four times a day to infants under six months. I have no hesitation in giving larger doses, and they are frequently required; on the other hand even smaller doses may suffice. The dosage in any particular case is always experimental, but one should always look forward to lessening it gradually and discontinuing it as soon as possible. Phosphate of soda may be used similarly and may be given in the infant's food.

Where the larger doses of salines have to be employed we may, perhaps, better use the drugs which I would place next on our list, cascara, belladonna, and nux vomica. They may be used separately or together. 10 minims of the fluid extract of cascara with 1 minim of nux vomica or belladonna, three times a day in glycerine and water acts well, and may gradually be withdrawn in the same way as the magnesia.

The immediate relief of constipation is a problem that faces us when we first undertake any case, and is the more important the more the case has been neglected and the greater the accumulation of fæces as revealed by abdominal examination and rectal exploration. For this purpose the administration of drugs by the mouth is unsatisfactory. I have stated the objections to castor oil; calomel is little better. All the more drastic purgatives are out of the question owing to their irritating and possibly after-binding effect on the intestines.

For the greater degrees of accumulation, soapy water enemata are probably the most suitable measure. Glycerine may be used instead of soap, and in either case a pint of warm water is to be employed and run slowly into the rectum. By careful management the colon also may be got to receive some of the fluid. The dilatation of the bowel thus caused is rather objectionable, as tending still further to weaken the muscular coat, so that these large enemata should be reserved for the beginning of treatment and for big accumulations.

In slighter cases the same object is served by the popular small enema of glycerine (ʒi. slightly diluted for convenience of injection), or by a glycerine suppository, or the rough and ready soap suppository; the latter may be coated with glycerine. These measures quickly secure an evacuation, the glycerine more rapidly than the soap.

The point to remember about them is that they are not curative. You can empty the bowel by means of them, and if you rely on them only you will have to empty it again and again.

Of course the regular emptying of the bowels even by such means (large enemata are not included here) may enable it to recover muscular tone, and so some enduring benefit be got, but this is a slow and tedious process, and injections and suppositories should be regarded as merely sufficient for the day, and not on a par with the treatment by general and dietetic measures and the internal administration of drugs.

Not only have these immediate measures to be employed at the outset of treatment, but they must be resorted to after rational treatment has begun, whenever the bowels have not been moved by the close of day. We are told that the sun never sets on the British Empire. We should have a sturdier race and less infantile mortality if it never set on an unevacuated rectum within the limits of that empire. Glycerine injection or suppository, or soap suppository must be used to secure a daily evacuation. But the necessity for their use is a signal that the dose of our chosen laxative must be increased for the present. Thus treatment tends to fall into periods.

(1) The initial relief of the accumulation.

(2) The stage of general and drug treatment, with resort to local stimulation as required.

(3) The stage of general and drug treatment only, this sufficing to get sufficient daily evacuation.

(4) The stage when drug treatment can be withdrawn, hygienic and dietetic measures sufficing to maintain the normal healthy action of the bowels.

Finally I may indicate the points in this paper which I wish chiefly to emphasise.

(*a*) Constipation is remarkably common and its effects on infantile mortality very marked in the aggregate.

(*b*) The slighter cases of constipation are not brought to us as such, and very careful questioning is necessary to elicit its existence.

(*c*) Crying and loss of appetite are particularly suggestive of such a condition.

(*d*) Emptying of the bowels by local stimulation is an initial and occasional necessity only; it is not curative.

(*e*) The correction of dietetic and other hygienic errors is the foundation of treatment, the internal administration of mild drugs being a commonly necessary auxiliary.

(*f*) The drugs chosen should be such that the dose can gradually be lessened, and their administration discontinued as soon as possible.

(*g*) Water as a beverage is a valuable adjunct to treatment, but the water of some districts is not suitable for this purpose.

(*h*) Success can only be obtained by patient treatment, continued until the bowel is quite capable of satisfactory spontaneous movement. Too early withdrawal of the aid of drugs and general supervision means relapse. Parents should always be warned that treatment may have to go on for an extended period of time, and that the immediate relief of the constipation is only the beginning of treatment.

A NOTE ON DILATATION OF THE DUODENUM,

WITH THE REPORT OF A CASE ASSOCIATED WITH MULTIPLE NEURITIS.

BY JAS. W. RUSSELL, M.A., M.D. (CANTAB.), M.R.C.P.,
ASSISTANT PHYSICIAN TO THE BIRMINGHAM GENERAL HOSPITAL.

I am indebted to Dr. Saundby for permission to publish the notes of the following case :—

Amy W., aged 21, a cook by occupation, was admitted into the General Hospital on July 15th, 1895. She first came under my care in the temporary absence of Dr. Saundby. Her complaint was of "loss of power in the feet and knees and general weakness," of six months' duration.

The family history was unimportant. Both parents were alive and healthy, as were seven brothers and sisters. There was no history of nervous disease in the family.

The patient had had measles in childhood, and an attack of "anæmia" five years ago. She had also suffered from indigestion at times. With these exceptions she had always had good health. Her home conditions were comfortable, and she had been in good situations, though her work had been heavy, and she suffered a good deal from the heat to which it exposed her. She assured us that she habitually took but little beer, and often none at all; she did not take alcohol in any other form. It may be added here that there was absolutely nothing in her appearance or behaviour to suggest alcoholism, nor was any suspicion of such habit to be obtained from her friends. She had not suffered recently from sore throat, nor was she in any way exposed to lead poisoning.

Until six months ago she had been in her ordinary state of health. She then began to be troubled with a little swelling of the ankles, especially at night, and with shortness of breath on exertion. There was also some return of the indigestion, and she would occasionally vomit when the pain was more than usually severe. At the same time she became aware of a gradually increasing feeling of general weakness. Her condition remained much the same for four months, when the legs began to swell, and to feel stiff and sore. Four or five weeks ago her legs began to "give way" when she was standing, and especially on getting up after sitting still for some time. She did not complain of any difficulty in walking at first, but shortly afterwards an increasing difficulty made its appearance. At the time of admission she had been away from work for six weeks, but the weakness had been steadily increasing, and she was now unable to walk without assistance.

The patient was a well-developed and fairly muscular woman. She was distinctly anæmic. There was no jaundice, cyanosis, or œdema. Her teeth were extremely decayed, and the tongue slightly furred. Appetite was good, but she complained of a sinking sensation if she went long without food, and of a dull pain in the epigastrium, going through to the back, after eating. There was no nausea or flatulence. As already stated, she vomited on rare occasions during any specially severe attack of pain. The bowels in general acted regularly. The abdomen was normal on examination, but at this stage there is no mention in the notes of the size of the stomach on percussion. The liver dulness was normal. She suffered from occasional palpitation of the heart. The cardiac dulness was normal; the first sound at the apex was long, but no other abnormality in the sounds was detected. Pulse was 108. The respiratory system was normal in all respects. The temperature was generally normal throughout her stay in the General Hospital, with the exception of an occasional rise as noted below. The urine varied from 24 to 34 ounces per diem, had an average specific gravity of 1015, and contained neither albumen nor sugar.

Nervous System. There was considerable generalised wasting of the muscles of both legs, more marked on the right side, and the muscular power was much diminished. The patient was quite unable to walk without assistance; the feet were dropped, and in walking the knees only were bent. She was unable to stand with the eyes closed. There was no recognisable wasting of the muscles of the upper extremities and no inco-ordination, as shown by the ability to thread a needle, to bring the forefingers together from a distance and to write without difficulty.

The patient complained of no pain or feeling of heat, cold, formication or tingling, but said that both legs were "sore and stiff." There was considerable tenderness of the calf muscles, and marked diminution of sensibility to touch, pain and temperature below the knees. During the last fortnight the eyes had been "weak" and intolerant of light.

Swallowing, micturition and defæcation were normal. The abdominal and epigastric reflexes were present. The plantar reflex was lost on both sides, as were also the knee-jerks. There was of course no ankle or patellar clonus.

On July 26th, the patient complained of pains in the back and twitching of the legs. In the evening she felt sick and faint, and the temperature rose to 101. She had had several of these attacks before admission and another occurred five days later.

On July 28th it was found that there was no re-action of the nerves or muscles of the legs to faradism, and that the muscles contracted only to the strongest available galvanic current. There is no note as to the polar re-actions. On August 1st some weakness of the grasp of both hands was noted, and also of the extensors of the fingers; and two days later the latter were found to contract slightly to faradism, but without increase to the galvanic current. Vomiting occurred on three occasions only during her stay in the Hospital.

On September 13th the patient was transferred to the Jaffray Hospital where she once more came under my own observation. Soon after her arrival she began to be troubled with frequent vomiting, and on October 8th it is noted that the percussion area of the stomach was large. Vomiting continued at intervals till October 17th, when daily washing out of the stomach was begun, after which there was no further sickness for more than a month. On November 17th the vomiting returned, and from this time until her death on December 3rd, it was persistent. Both the vomited matters and the fluid drawn off by the stomach tube were extremely foul. At the same time the physical signs became characteristic of a large and progressively increasing dilatation of the stomach. The abdomen presented a swelling with a slightly curved upper margin, whose lower border reached well below the umbilicus, and over which a loud succussion splash was invariably obtained. There is no mention in the notes of the effect of the washing out upon this swelling, but presumably—considering the condition found after death—it must have remained unaltered by the operation. I did not, however, have any opportunity of observing this point myself. The patient grew progressively weaker and more exhausted, and died in a condition of great prostration on December 3rd.

Post mortem, there was some tendency to dilatation of the right side of the heart, but no valve or muscle lesion. The lungs were markedly œdematous. The stomach was considerably dilated and displaced to the left: the lower border was about one inch above the level of the umbilicus. The organ was sharply flexed on itself. The first part of the duodenum was enormously distended, and on opening the abdomen was at first mistaken for a dilated stomach. It was separated from the pyloric end of the stomach by a well-marked sulcus, and was adherent to the gall-bladder by chronic adhesions. It extended below the margin of the liver for three inches, reached to the left for one inch beyond the middle line, and on the right touched the eighth, ninth and tenth ribs. The dilatation terminated abruptly at the end of the third part of the duodenum, but there was no evidence of obstruction, the only possible pressure being that exerted by the superior mesenteric vessels. The liver showed some fatty degeneration; the kidneys, uterus and appendages, and brain were all normal.

The great sciatic and anterior tibial nerves appeared atrophic to the naked eye, and on teasing out under the microscope were found to have undergone extensive degeneration. The vagus nerves were examined in a similar fashion. The great majority of the fibres were perfectly normal, but here and there strands were found in a condition of extreme degeneration. The specimens were unfortunately lost before they could be photographed.

Two points of interest are raised by this case: first, the cause of the neuritis; and secondly its relation to the dilatation of the stomach and duodenum.

I am quite unable to assign any satisfactory cause for the neuritis. As I have said, alcoholism was strongly denied both by the patient and her friends, the general appearance and behaviour were entirely uncharacteristic of the alcoholic habit, and none of those who observed the case felt justified in assuming the presence of this cause, except on the ground of the impossibility of assigning any other. There was no history of previous sore throat, pointing to diphtheria, and no evidence of metallic poison could be detected. It seems altogether out of the question to diagnose beri-beri in the absence of any other similar case; moreover œdema was only noted before the patient's admission, and the heart did not become markedly enfeebled until the terminal stage of the illness. It is useless to speculate upon an auto-intoxication as the cause of the neuritis in the lack of definite knowledge of any such origin of the condition. There was, however, some evidence of anæmia before admission.

The case may, perhaps, be held to throw some light upon the causation of certain cases of acute dilatation of the stomach and duodenum—two conditions which, as is now recognised, are closely associated with one another. In the past considerable interest has been shown in the cases of acute gastric dilatation which have been reported from time to time in the medical journals, but attention has only of late been prominently drawn to the fact that this condition is at least not infrequently associated with a more or less pronounced dilatation of the duodenum. I cannot make any pretence of giving an exhaustive list of cases of the latter condition, but the following may be quoted in illustration of the association :—

In a paper published in the *Clinical Society's Transactions* for 1898, Dr. C. R. Box and Mr. Cuthbert S. Wallace record a case of acute dilatation of the stomach, and give an abstract of a number of fatal cases gathered from medical literature. Fifteen of these were subjected to *post-mortem* examination, and in five dilatation of the duodenum was also reported. Thus: (1) Schultz (*Jahrbuch d. Hamburgher Staatskr. Anst.*, 1890, Vol. II, p. 145), "The duodenum was also dilated." (2) Hood (*Lancet*, 1891, Vol. II, p. 1389), "The duodenum and upper part of the ileum were also distended." (3) Wright (*Practitioner*, 1897), "Nothing was found but dilatation of the stomach and duodenum." (4) Kelynack (*Medical Chronicle*, 1892), "The first part of the duodenum was also much dilated." (5) Jessop (*Lancet*, Vol. I, 1888). At the time of operation, "the stomach, duodenum and the first six inches of the jejunum were found enormously distended." "At the necropsy, nothing was detected but extreme dilatation as described above, passing abruptly to a condition of extreme contraction at a point six inches below the duodenum."

Dr. Box and Mr. Wallace further report two additional cases of acute dilatation of the stomach in the *Lancet*, November 9th, 1901. (1) In the first, acute and fatal dilatation of the stomach and of part of the duodenum occurred after amputation of the leg for cellulitis and hæmorrhage. The stomach was dilated and very prominent, without displacement of the upper border. The lower border extended well below the umbilicus. The first part of the duodenum was dilated to twice its natural size, and the dilatation extended to the place where it came in front of the lumbar spine. (2) The second case was one of pleuro-pneumonia with severe toxic symptoms. The stomach was found to be greatly distended and lay with its long axis directed downwards and to the right. The lowest part, within a few inches of the pylorus, reached the level of a line joining the anterior superior spines of the ilium. The lesser curvature, after emerging from beneath the liver, ran almost vertically to a point on the right of the middle line on a level with the umbilicus, then becoming sharply recurved and ascending to the pylorus. The duodenum was also much dilated, but the intestines below were collapsed.

Dr. Byron Robinson, writing in the *American Practitioner and News*, August 15th, 1900, states that out of several hundred *post-mortem* examinations he has noted fifteen to twenty cases which showed distinct and extensive gastro-duodenal dilatation, beginning in the duodenum on the right side of the superior mesenteric artery and vein.

Opinions differ as to the actual causation of the dilatation both of the stomach and the duodenum in these and similar cases. According to certain writers, the condition is to be explained by the pressure of the superior mesenteric vessels on an atonic intestine, an opinion based on the remarkable abruptness with which the dilatation often comes to an end, as in my own case, at the point where these vessels cross the duodenum. Dr. Byron Robinson strongly supports the pressure theory, but considers that the immediate cause lies in a downward displacement of the viscera dragging on the bundle composed of the artery, vein and nerve. Dilatation then goes on quietly, especially if the patient be compelled to lie for any length of time on his back. In support of this idea he quotes the case of a man who had been for some time bed-ridden with disease of the hip, and in whom enormous dilatation of the duodenum was found at the necropsy. According to this theory the dilatation, when involving the stomach, actually begins in the duodenum.

Drs. Perry and Shaw (*Guy's Hospital Reports*, 1893), in speaking of certain cases observed by them of dilatation of the stomach and duodenum unaccompanied by any sign of obstruction, attribute the condition to a fixation of the bowel together with the impairment of its contractility by adhesions.

In their first paper, already quoted, Dr. Box and Mr. Wallace dismiss the theory of pyloric obstruction, spasmodic or otherwise, as a cause of acute dilatation of the stomach, on the ground that the duodenum is often found to be involved in the enlargement. They further object to the idea of profuse secretion of fluid by the stomach, which has been suggested as the origin of the distension. In their opinion, the most probable explanation lies in a paralysis of the stomach wall and sometimes of the upper part of the small intestine as well, a paralysis which may be either traumatic or toxic.

In their second paper, the same writers make a valuable suggestion as to the origin of the dilatation. After pointing out that the origin in pyloric spasm is further discredited by the presence of bile in the stomach contents, and bringing forward objections to the theory of pressure by the mesenteric vessels, the writers proceed to record certain experiments made on the cadaver. They found that it was possible to enormously distend the stomach by water pressure even after previously dividing the jejunum, which was left lying patent in the abdominal cavity; and that under these conditions the stomach remained distended. The same result was obtained after dividing the superior mesenteric vessels and the peritoneal folds in their neighbourhood. If, however, by introduction of the finger well behind the distended stomach, a little to the left of the middle line of the spinal column, the fundus and posterior wall of the stomach was gently raised, the excess of fluid flowed freely and at once from the open end of the jejunum. If the part of the duodenum which lies on the right of the spine behind the peritoneum was first incised, it was found to be impossible to produce any tense distension of the stomach. They, therefore, think that the distension is due to actual pressure of the stomach on the part of the duodenum which crosses the third, and ascends by the side of the second lumbar vertebra to end in the jejunum. Two factors are thus necessary: (1) paralytic condition of the stomach leading to distension; (2) pressure on the duodenum by the distended stomach.

It appears to me that in my own case it is not irrational to connect the wide-spread neuritis with the paralytic condition of the gut thus assumed to be necessary for its dilatation, and I am inclined to attach some weight to the degenerated condition of certain of the fibres of the vagus; but whether it is necessary to bring in the factor of pressure in addition does not seem to me to be certain. In favour of this view may be mentioned the observations of Carrion and Hallion (*Semaine Médicale*, August 21st, 1885), which show that section of the pneumogastric in dogs leads to dilatation of the stomach. These observations are quoted by Mr. W. H. Brown in the *Lancet*, October 14th, 1899, and he refers to the fact that lesions of the vagus have been found by other observers in cases of dilatation in human beings. I may further quote a case of extreme dilatation of the whole of the large intestine recorded by Dr. H. W. Syers in the *Lancet*, January 4th, 1902, in which the solar plexus was found to be distinctly atrophic.

In conclusion, a remarkable case of dilatation of the duodenum is reported by Mr. Barling in the *British Medical Journal*, May 11th, 1901. After death the duodenum was found to be enormously dilated; the walls were as thin as tissue paper, and had actually ruptured at one point. The wall of the stomach was also thin, and the muscular fibres considerably atrophied with a certain amount of fibrous degeneration. The finger, when passed through the pylorus, entered a large cavity, which was the hugely dilated first part of the duodenum. This was bounded above by the under surface of the liver, below by the hepatic flexure, and in front by the anterior abdominal wall. It was limited to the left by dense adhesions beneath the scar of a former abdominal section, and to the right by adhesions between the hepatic flexure and the anterior abdominal wall. In the posterior wall of the cavity the remains of the first part of the duodenum could be traced. The openings into the pylorus and the second part were distant from each other by 1½ inch. The lining membrane of the cavity in the neighbourhood of the pylorus was smooth, and consisted of the mucous membrane; muscular tissue could also be distinguished. The anterior, inferior and right lateral aspects were rough and ragged, the mucous and muscular coats having disappeared, and the wall consisting of fibrous tissue. The opening into the second part of the duodenum was situated on the posterior wall of the cavity; it admitted two fingers, and was guarded by three large flap-like projections 1 inch in length and ¼ inch in thickness. This valve-like arrangement was distant from the pyloric opening by 1½ inch, and it was the intermediate part of the duodenum which had given way. Mr. Barling attributes the dilatation to a congenital defect in the shape of the valve-like projections, and it seems clear that this case must stand on a different footing from those which have formed the subject of the above discussion.

Congenital malformations of the duodenum are largely represented in medical literature, but I have not found a record of any case at all comparable with that described by Mr. Barling. All the cases of congenital obstruction that I have been able to find—and a long list is quoted in the Catalogue of the Surgeon-General's Library of the United States Army—have occurred in infants or very young children. Drs. Perry and Shaw, in the paper quoted above, give two varieties of congenital stenosis: one in which a membranous septum is stretched across the lumen of the intestine, the other in which the bowel for a shorter or longer distance is narrowed by a fibrous stricture. An excellent example of a large dilatation of the duodenum due to the former of these two causes is to be found in a case recorded by Dr. George Buchanan in the *Pathological Society's Transactions* for 1860-61. Here the duodenum was at first mistaken for part of a hugely dilated stomach, which was supposed to be divided into two compartments by a transverse septum; and it was only by the discovery of villi in its mucous membrane that the real nature of the condition was recognised. To these two causes of congenital obstruction must now be added the valve-like projections described by Mr. Barling.

In order to complete the subject, reference may be made to certain other causes of definite obstruction of the lumen of the duodenum. Drs. Perry and Shaw give the following list, apart from the congenital cases already alluded to:—(1) Contracting simple ulcer and carcinomatous strictures; (2) pressure by peritoneal adhesions, carcinoma of pancreas, carcinoma of liver, adhesions about the gall-bladder, growth, blood-clot, aneurysm, and kinking. To this list must be added a cause of obstruction reported by Heschl (*Zeitschr. d. k.-k. Gesellsch. d. Aertze zu Wien*, 1851), in the shape of compression of the duodenum against the vertebral column by a long transverse meso-colon.

MEDICAL ABSTRACTS.

SOME RECENT ARTICLES ON SPINAL ANALGESIA.

BY W. J. MCCARDIE, B.A., M.B., B.C., CANTAB.

Analgesia, by intra-spinal injections of cocaine, eucaine, tropacocaine, etc, has now had a fair trial as to its suitability for surgical operations. Opinions as to its value and safety are very contradictory. It is here enough to say that this method has not come into very general use, and in Germany where Bier brought Corning's experiments into actual practice on the human being, spinal injection has been for some time fairly generally discarded. A few French surgeons following Tuffier's lead still largely depend on "rachicocainisation" for their work, and in the United States of America and other countries various surgeons still use the method.

A critical survey of the following abstracts will, it is hoped, afford the reader an independent means of forming some idea of the advantages, disadvantages and dangers of obtaining surgical analgesia by spinal injections. In short the method consists in the injection of about 15 minims of a 2 per cent. solution of cocaine, or one of its alternatives, into the spinal canal between the nerve trunks forming the cauda equina and usually between the 3rd and 4th lumbar vertebræ.

Spinal Analgesia. G. R. Fowler (*Brooklyn Med. Journ.*, Nov., 1901) reviewed in discussion his experience of this procedure. He has used it in 53 cases, including gastrostomy, nephrectomy, herniotomy, oöphorectomy. The percentage of failures if cerebro-spinal be withdrawn must be very small. The shortest time analgesia had lasted in his experience had been 27 minutes and the longest 3½ hours. Analgesia had always reached the diaphragm, and in four cases it reached the vertex, *i.e.*, was complete from head to foot. He noted nausea in at least half his cases, vomiting on the table in about 30 per cent., involuntary defæcation and micturition in about 4 per cent. The branches of the ilio-inguinal and ilio-hypogastric nerves passing along the inguinal canal are sometimes unaffected; they arise high up, beyond the influence of the cocaine in the instances where this affects only the lumbar nerves, and therefore patients may complain of pain during operations for inguinal hernia or varicocele, though they do not shrink or loudly protest. In other cases a dragging sensation is complained of, due to retraction of the skin edges. The deeper analgesia is sometimes less pronounced than the superficial. The peritoneum is sometimes sensitive, particularly if chronic or low grade inflammatory changes be present. Thus many intra-abdominal operations cannot be undertaken. Headache usually appears within 4–5 hours after operation, and is refractory to treatment. Alteration of the dosage of cocaine does not prevent it, nor the substitution of antipyrin or saline fluid for it. The cause of headache then probably is the injection of a foreign fluid into the cerebro-spinal canal. In one case the respiratory centre was involved, as shown by marked cyanosis; also the vomiting centre, as shown by prolonged vomiting; persistent vertigo occurred even when the patient was lying down; finally the heat centre was affected, for the temperature at night reached 106·8° F., the highest recorded temperature from this cause. However, these symptoms caused no uneasiness as the author had previously seen similar though less marked cases. The method is not advisable for nervous subjects, and should be replaced by general anæsthesia, if any difficulty or crisis which upsets the patient arises during operation. He had had no fatality due to spinal cocainisation. Fowler had the spinal cord of a deceased patient examined. The point of injection (5 days before death) could not be found. The cord itself was quite normal in appearance. On the meningeal membrane were two or three little points apparently, of coagulated lymph or fibrin; there was no injection or turbidity of fluid suggesting any possible pathological condition in connection with the points.

Landowsky's experimental injections of strychnine or ferrocyanuret of sodium into the sub-dural space are quoted and seem to show that the action of cocaine on the nerve structure is not the result of absorption by the vessels. The cyanuret, *e.g.*, was found in the lymph spaces and not in the vessels. If the cerebro-spinal fluid be really a lymph fluid freely communicating with the lymph spaces of the cord and its branchings, the fact that analgesia occurs so quickly without the intervention of tonic symptoms is easily explained.

A Death by Rachicocainisation. Broca reports (*Le Progrès Médical*, July 20th, 1901), a case of Dr. Prouff's. The patient was a woman. For the examination of an arthritic knee 1 c.c. of a 1 per cent. solution of cocaine was injected. Perfect analgesia was obtained, and after the examination the patient could walk. One hour later she was able to attend to work, but four hours afterwards she was attacked by intense spinal pain, and when seen was deadly pale, was suffering agonising pain, and had an uncountable pulse. Next day she died. M. Nélaton, in the same journal, is reported as saying that he had recently seen very serious cardio-pulmonary accidents from the method, and analysis of cocaine has shown that it had recently undergone alterations which might possibly have caused the serious symptoms. M. Rochard confirmed M. Nélaton's observation, and pointed out that ecgonine, which has properties like those of atropine, is, amongst others, one of the products of decomposition of cocaine.

Statistics of Spinal Cocainisation. In the *Inter-Colonial Med. Journ.*, October 20th, 1901, are quoted statistics collected by F. Hahn (*Grenzg. d. Med. u. Chir.*, Band 4, No. 1.). There were 1,708 cases taken from 128 different sources. Of these 110 were failures, *i.e.*, no anæsthesia resulted; 25 were followed by serious symptoms, evidently due to the injection; 8 ended fatally immediately afterwards, and apparently as a result of the procedure.

Two Cases of Immediate Death by Rachicocainisation. F. Legueu (*La Presse-Médicale*, November 9th, 1901), fully reports two fatalities, a few minutes after the injection, on the operating table, and indubitably due to the influence of the cocaine. There was no fault in the injection or in the dose, which was less than or equal to 2 centigrammes. The cocaine was unaltered as shown by analysis, and the same solution, both before and after the fatalities, gave good results. The condition of the patients will be described fairly fully as the issues are important.

Case 1. A man, aged 54, when walking fell down unconscious, and was taken home. In a few hours he recovered sufficiently to go downstairs, where he had another apoplectiform attack; was unconscious all night, recovered in the morning, was sent to hospital, and found to have a ruptured triceps tendon of his left thigh. Operation was needful. What anæsthetic was to be used? Here was a patient fat to obesity, flushed and apoplectiform in countenance, emphysematous, weak heart sounds, a bruit at the apex of the heart, and atheromatous arteries. The author did not care to give chloroform, having once lost a patient under it in like condition, and had an idea that this man would likewise succumb. The case was a very bad one for cocaine. However, spinal anæsthesia was chosen. The first puncture only gave blood, the second limpid spinal fluid, which came forth slowly drop by drop. A little less than 2 c.c. of 1 per cent. solution was injected, the patient lay down, and his thigh was being prepared while M. Legueu was cleaning his hands. Then ten to twelve minutes after injection the operation was begun, while the patient lay quiet, saying nothing, feeling nothing. Suddenly while the knee joint was being opened and the clots removed, the patient complained of being stifled, wanted to sit down, and began to groan. He was allowed to be seated; made some convulsive movements with his head, fell back in the bed, and became black in the face. He was dead. This happened three to four minutes after the beginning of the operation, and about a quarter of an hour after the injection. An autopsy was not allowed. Although it is most distressing to lose a patient on the operating table, the conditions were so bad that the author was not altogether surprised. He rather blamed himself for not having recognised that the atheroma and cerebral congestion contra-indicated rachicocainisation. On the other hand he thought chloroform the more dangerous. After this he continued to induce spinal analgesia successfully as before.

Case 2 was one which the author did not himself see, but he vouches for the facts. A man aged 61 was brought to the Hôtel Dieu suffering from a strangulated (for 48 hours) hernia. The patient's general state was very bad. He had only vomited once in the night, but his face was earthy, his nose pinched, lips discoloured, face and limbs cold and clammy, voice almost gone, pulse small and quick (about 140), and temperature 36·8° C. As other cases in condition as bad had been operated on under cocaine it was decided to use it, and 1½ centig. of a 1 per cent. solution were injected without any trouble. The groin had just been cleaned and prepared when respiration was noticed to become difficult, and he vomited twice. His face was pale, his forehead covered with sweat, then suddenly his breathing became slow. Two injections of ether were given, and oxygen was administered, but respiration stopped, and death occurred without a movement or groan twelve or fifteen minutes after the injection, and six or seven minutes after the onset of dangerous symptoms.

The operation had not been begun, and analgesia was not fully developed. *Post-mortem* examination showed nothing specially noteworthy about the hernia. The heart was of normal size, but appeared rather flabby. On section the myocardium appeared healthy. The cavities contained neither clot nor liquid. The mitral valve, though slightly atheromatous, was in good condition. Tricuspid and pulmonary valves were sound and aortic very slightly atheromatous. The aorta was not dilated, and fairly healthy. The orifices of the coronary arteries were widely open, and the vessels patent. The pleuræ showed old adhesions above. The left lung was slightly congested below, but fully crepitant all over. The right lung showed more intense congestion, but was everywhere crepitant, although it contained a certain number of blackish congested patches, almost infarcts, which projected on section, and from which could be expressed black blood. These patches were crepitant. There were six or eight of the size of a walnut or hazel nut in the two lower lobes, and one a little larger in the upper one. There were some calcified tubercles at the apex, and a large one in the middle lobe. The tracheo-bronchial glands were enlarged but separate, and could not in any way press on the vagus nerve. The liver and spleen were normal. The kidneys were rather small and slightly contracted; the capsules peeled easily, but the cortex was reduced to 6 or 8 mm. The left organ contained two cysts of the volume of an orange together, while the right one had one cyst. Histological examination showed no important lesion. The dura mater was strongly adherent to the cranium, but there was no lesion, meningeal or cerebral. The arteries were remarkably supple and patent. There was no bulbar, cerebellar or other lesion. To summarise, the heart, empty of clot, had stopped in systole; the pulmonary lesions were recent and not very serious; the kidneys showed two cysts, but no other important lesion. Thus uræmia was not to be thought of; besides uræmia would have to be very rapid to be caused in fifteen minutes by 1½ c.gr. of cocaine, and would rather explain death in a few hours, with headache, persistent vomiting, etc., from defective elimination of cocaine. *Thus death probably resulted from syncope caused by the direct and immediate action of cocaine on the bulb.* Legueu believes these to be the first two deaths from rachi-cocainisation, and giving in his practice a mortality of 1 per cent. He has never had any other serious accidents with the method, and believes he has saved a patient's life more than once by substituting cocaine for chloroform. Spinal analgesia will still have a certain sphere of usefulness. We only, as yet, imperfectly know the indications and contra-indications for its use. In the first case atheroma and cerebral congestion would seem to have been contra-indications; in the second, the renal lesions were slight, and the author is more put to it to find a contra-indication. Great prudence in the choice of patients and in the administration of doses must be exercised.

Untoward and fatal Subarachnoid Anæsthesia. The *Therapeutic Gazette* for September 15th, 1901, quotes from the *Alienist and Neurologist*, April, 1901, two cases recorded by Goilav of old men suffering from senile obliterating arteritis shown by absence of arterial pulsation, livid skin, and intolerable itching. Albuminuria was not present. In one case ordinary treatment for the pain being ineffectual, Goilav injected between the 4th and 5th lumbar vertebræ a 1 per cent. cocaine solution. Anæsthesia occurred in 12 minutes and lasted 24 hours. After the injection there was headache, nausea, vomiting, intense chills, rapid pulse and raised temperature. These symptoms lasted for nearly three days during which caffeine and ether were repeatedly injected as remedial agents. In the second case quoted, 1½ c.gr. of a 1 per cent. cocaine solution were similarly injected before amputation of the leg. (N.B.—The dose was the same that was injected in Legueu's 2nd case. W. J. M.). Perfect anæsthesia ensued in 15 minutes. After operation lasting 40 minutes the patient was put back to bed and surrounded by hot water bottles. In 2 hours intense chills came on, pulse and temperature rose, and in spite of all remedial measures death followed in 20 hours. Goilav thinks that rachicocainisation is contra-indicated in cases of senile obliterating arteritis, and that chloroform or ether is not relatively more dangerous than cocaine.

Lumbar Cocainisation; Absence of Analgesia; Prolonged Intoxication. M. M. Carrière and Vanverts record this case (*L'Echo Médical du Nord*, May 19th, 1901). The patient was 23 years old. When 14 he was operated on under chloroform for osteomyelitis of the tibia and for three days afterwards had severe headache, and vomiting which was extremely frequent; everything ingested was immediately brought up.

The patient on the present occasion was in excellent general condition, though he had enlarged and probably tuberculous glands, but needed operation for abscess of the leg. 1 c.gr. of a 1 per cent. sterilised solution of cocaine was injected. The appearance of cerebro-spinal fluid showed that the subarachnoid space had been reached. After 4 minutes, violent efforts at vomiting appeared which were calmed by the administration of spirits. At the end of 7 minutes attempt was made to open the abscess; but complete or almost complete sensibility persisted, as also at the end of 15 minutes, so the operation had to be done without anæsthesia. Luckily it was short. During the day the patient had headache but ate with appetite an egg at midday and in the evening. In the following night towards 2 a.m. vomiting and intense headache re-appeared, and persisted for the next 3 days. No food was kept down. When the foot was put to the ground a very pronounced sensasation of vertigo was felt. On the last evening the temperature was 38·5° C. For the next 5 days vomiting and headache were less marked in the morning and so long as the patient lay in bed, but they re-appeared when he got up. On the 11th day the troubles completely disappeared. In other respects the patient's health was good, and the wound did well. The cocaine solution had been strictly standardised before use, and that it was unaltered after the operation was shown by the fact that it was uneventfully used for subcutaneous injection on another patient.

This prolonged case of intense intoxication does not encourage the authors to further try spinal cocainisation. Moreover the comparison between *this method and chloroformisation* is well illustrated in the case of this patient. After chloroform his symptoms lasted for 3 days only, as compared with 10 days after cocaine. The headache and vomiting were so severe as to cause fear of the generalisation, with special meningeal localisation, of the tubercular process.

A Report of Twelve Operations on Infants and Young Children during Spinal Analgesia. Bainbridge (*Archives of Pedriatics*, July 1901), first tried spinal analgesia on young children (*New York Medical Record*, December 15th, 1900). Since then he has done twelve operations on patients from 4 months to 6½ years, and over 40 on those under 15 years. The operations on the younger patients were for phimosis, large double scrotal hernia (done separately on different dates, eucaine being unsuccessfully tried for the second, which had later to be done under cocaine as before), prolapsus recti (two operations), talipes equino-varus, for tubercular knee-joint, sounding of the bladder, necrosis of tibia, genu varum, double scrotal hernia. After headache appeared in four cases. The author concludes that children of all ages stand this method exceedingly well. They may cry out before or during the injection, but they soon become quiet, and usually remain calm during operation. He has given, what seemed at the time, large doses of cocaine, but in only one instance have any alarming symptoms occurred, and then he could not say whether the injection or the disease was the cause of them. Usually the increase in the drug has resulted in a more satisfactory analgesia, and fewer after-effects. One case is especially interesting as the second instance recorded of general analgesia.

Tumour of Bladder removed under Spinal Anæsthesia. After-Effects. Willy Meyer (*Annals of Surgery*, October, 1901), operated on a patient, aged 64, for bladder tumour, and used spinal analgesia because he had chronic bronchitis. 2 c.gr. of cocaine = ⅓ of a grain, were injected, and gave perfect anæsthesia. After operation chill and high fever persisted for six days, and were attributed to the effects of cocaine. Meyer prefers tropacocaine, which he has never seen cause unfavourable symptoms. The anæsthesia obtained after injecting 5 c.gr. of this drug lasts about an hour. For longer operations 6 or even 7 or 8 c.gr. of a 1 per cent. solution can safely be injected. It would be a wise precaution in all cases to first try it in the nose and pharynx to ascertain if any idiosyncrasy to its action exists.

Substitution of Patients' own Spinal fluid for Water as Vehicle for Cocaine in Spinal Cocainisation. (Reported by Guinard in *Revue de Chirurgie*, November, 1901, page 535.) Guinard quotes M. M. Ravaut and Aubourg, who found that the water in which the cocaine is dissolved is the cause of the bad aftereffect of spinal cocainisation. It had previously been found that injection of saline fluid caused analgesia, but injection of pure sterilised water into the spinal canal of patients did not produce analgesia, but after some hours caused hypothermia to 40°C., and intense headache; a second puncture (presumably not containing cocaine, W. J. M.) made in order to calm the headache let out a turbid fibrinous liquid in which was a considerable quantity of polynuclear elements (Ravaut). So when in the ordinary method of injection of cocaine the needle point reached a depth of 4-5 centimetres, and no resistance to it is felt, the wire in the needle is withdrawn and 60–80 drops of spinal fluid are received into a small sterilised beaker. While the liquid is dropping out through the needle, 6–7 drops of a concentrated solution of cocaine, of strength 1 centigramme to 2 drops of water, are slowly allowed to fall from a graduated drop vessel into the spinal liquid contained in the receiver. Then the mixture of spinal fluid and cocaine is drawn into the syringe and slowly injected through the needle into the spinal canal. M. Guinard has undertaken more than 50 operations by this method and has not seen any after-effects at all. Therefore he concludes that the water formerly used as a vehicle for the cocaine caused the after-symptoms of rachicocainisation.

Tropacocaine in Spinal Analgesia. Willy Meyer (*New York Medical Record*, October 19th, 1901), following Schwarz, of Agram (*Centralblatt für Chirurgie*, March 2, 1901), has tried tropacocaine instead of cocaine, and claims for it:—(1) That it is less than half as toxic as cocaine. (2) That recovery from its effect is much more rapid. (3) That the solution is much more stable. He was of opinion that at present spinal analgesia should only be used under strict indications.

Herman Mynter (*Ibid*) quoted a case of operation for hernia under this method, which well shows one of its possible disadvantages. Persistent and explosive vomiting suddenly occurred, and this had caused a complete evisceration of the patient, who, raising his head, was able to view his sad plight.

Surgical Opinions on Rachicocainisation. Nélaton (*La Semaine Médicale*, May 15th, 1901), has used the method in 150 cases. In five cases anæsthesia was absent or not sufficient, and chloroform had to be given. In a cachetic old man of 67 years, alarming symptoms appeared for about a quarter of an hour. In 45 cases the result was moderately good; in 20 it was excellent, and good in 80, in spite of some slight inconvenience. He does not think for large operations this procedure will replace chloroform, but it is useful for simple short operations on the lower limbs or pelvis. Schwartz (*Ibid*) has had 49 cases. In five there was no analgesia, but in spite of this two patients were nauseated. Vomiting lasted in one case for five days. Ricard (*Ibid*) has had 50 cases, and always obtained perfect analgesia. In several cases he has been very much afraid for the patient because of his pallor, anxiousness, and headache, which was at times very painful and often prolonged. So much was this so that he has given up spinal analgesia.

Reclus (*Ibid*) says the method would be excellent if its results were regular. Unfortunately this is not so. Analgesia is sometimes absent or only appears very slowly, while its duration and extent are quite variable. Again we must consider the elevation of temperature, the headache and vomiting, which often enough last several days. As for the six fatalities which he recently cited (*La Semaine Médicale*, 1901, p. 93), it hardly appears possible for him not to impute them to the cocaine. He possesses, besides, a series of observations where accidents have been observed which have not been far from ending in death.

Laborde (*La Semaine Médicale*, March 27th, 1901), says the dangers of injecting a quantity, however small, of cocaine into the lumbar arachnoid cavity are of two kinds, viz., those inherent to the local action of the poison and those due to its absorption. By its absorption and also perhaps by its diffusion in the spinal fluid, cocaine affects the bulb; hence the frequent troubles of respiration and circulation and the syncope, occasionally fatal, also the vomiting, headache, trembling, etc. The method of subcutaneous or submuscular injections is preferable when local anæsthesia is enough, and chloroformisation or etherisation when general anæsthesia is necessary.

General or Very Extensive Anæsthesia by Rachicocainisation. Many important points are embodied in a paper on this subject by Chaput (*La Presse Médicale*, November 9th, 1901), who believes that analgesia can easily be produced by Tuffier's technique, not only in the upper limbs and chest but perhaps also in the head and skull in certain cases. Recently he resected the elbow joint and the olecranon under perfect analgesia, which in the first case extended all over the body, in 25 minutes. In a third case he, Chaput, disarticulated the wrist of a patient who had intense albuminuria. Complete analgesia only extended to the 3rd rib, was moderate in the arm, and the patient complained much but did not cry out greatly.

Without cocaine operation would have been impossible. The author also excised some tuberculous and suppurating cervical glands under excellent analgesia, which extended over the whole body, and in another case he removed the styloid apophysis of the temporal bone; analgesia reached up to the tragus, but the patient complained of pain. In the 6th case he opened a bony abscess in the same region, analgesia extending to the chin.

The author observes that the neck and face operations have not been perfectly satisfactory in regard to analgesia; the patients complained and appeared to suffer. The distress caused by cocaine must be taken into account, and also the emotion of the patient, who knows every detail of the operation. Hence for the present the method should not be used for operations in the region of the face. Chaput thinks that in the future more satisfactory results will be attained by only operating on courageous subjects. Perhaps, too, betterment of technique will lessen phenomena of excitement. It must be remembered that in higher regions the field of operation is often at the limit of analgesia, which is therefore less satisfactory than in the lower parts, so that it may be necessary to increase the dose of cocaine in order to get more perfect analgesia. The author would not hesitate to use rachicocainisation for an operation on the head of a patient in whom general anæsthesia and local cocainisation was contra-indicated. The disadvantages of rachicocainisation in head operations are:—(1) Analgesia is often slow in coming on. (2) Needs larger doses of cocaine. (3) Operations in this region frighten the patients, who see and hear everything. (4) Other methods are more generally applicable. Eleven times out of 120 ordinary cases Chaput has obtained total anæsthesia. Analgesia of the upper limbs can be induced with doses of 1½ to 3½ centigr., but this effect is not constant. For certainty 4 centigr. must be used. The author does not find this large dose dangerous, and thinks his careful technique may have something to do with tolerance of the dose. His method is well worth quoting.

The patient is not allowed to eat before operation; one hour previously he is given 60 grammes of "*potion* de Todd" to which is added 25 drops of tincture of digitalis, and 20 grammes of syrup of morphine. Before the injection an elastic *ligature* of moderate tightness is placed round the neck. For the puncture and injection the right lateral decubitus is used, the limbs being bent. A solution of 1 in 100 of water or the patient's own spinal fluid, using a mother solution of cocaine containing 1 centigr. in one drop; just after the lumbar injection 500 grammes of *serum* are injected under the skin of the thigh, and even a litre if there be any tendency to syncope, in which case injections of caffeine are given. On the other hand if there be excitation or anxiety, ½ or 1 centigr. of morphine is administered *sub cute.* Thanks to these precautions the author gets few unpleasant effects in spite of large doses of cocaine, *i.e.*, his results are now better with 4 centigr. of cocaine that those he obtained with 1½ centigr. given in the usual way. Considering the influence of dosage on the extent or rather height of the analgesia he calls *high* analgesia that reaching to the upper limbs or beyond, and *low* that not reaching to the upper limbs. The height reached gradually increases with larger dosage, and with 4 centigr. high analgesia is always obtained. Detailed figures are given to show this, 120 cases being analysed.

Aqueous solutions of cocaine at 1 per cent. do not diffuse so well as isotonic solutions, because when the mother solution, containing 1 centigr. per drop, is heated several times, it rapidly precipitates, and thus largely loses its essential qualities. It is recommended to use only fresh solutions prepared in very small quantities for each administration. High analgesia is not accompanied by any more serious phenomena than low analgesia. After-effects have been very much lessened by the use of isotonic solutions.

The author comes to the following conclusions:—

(1) High or total anæsthesia can be produced by rachi-cocainisation, even with small doses. (2) To be sure of getting anæsthesia of the upper limbs it is well to use a dose of 4 centigr.; this anæsthesia is very satisfactory. (3) Anæsthesia

of the face and cranium is not satisfactory enough to readily allow of operation, chiefly because of the emotion of the patient, who sees and hears everything. Anæsthesia of the head should only be attempted when inhalation and local anæsthesia are quite contra-indicated. (4) Isotonic solutions appear to diffuse less than aqueous, and therefore do not give so high an anæsthesia. (5) High anæsthesia is not accompanied with serious or frequent accidents. Large doses of 3 or 4 centigr. do not cause serious or frequent accidents.

Late and Prolonged Cerebro-Spinal Symptoms following Cocainisation of the Spinal Cord. In the *Glasgow Medical Journal*, for September, 1901, is an abstract by G. H. Edington, from the *Journal de Chir. Bruxelles*, Avril–Mai, 1901, of a case of operation by Daudois, on a man aged 57, for traumatic urethral rupture with abscess. Because of symptoms of infective absorption from decomposing urine, and cardiac and pulmonary troubles, general analgesia was thought to be contra-indicated, 2 c.gr. of cocaine were injected. All went well till 4–5 hours after operation, the usual after-effects, viz., slight rise of temperature, quickening of pulse (120), bilious vomiting, and headache occurred. Also unusual nervous phenomena (twitching and delirium) appeared; but by next day all these toxic symptoms had gone, and after this the phenomena of pre-operative infection quickly declined. Then on the *8th* day after operation "the patient complained of dull pains in the pelvis and lower limbs. The next day there was complete paraplegia, but sensibility was present. At the same time cerebral symptoms appeared, and became accentuated:—Insomnia, wild delirium; then violent delirium with crises, resembling at times mania, at others, dementia; absolute unconsciousness (*inconscience*). There was neither elevation of temperature nor any other morbid symptom. The nervous symptoms remained unchanged for more than a month.

"On February 16th slight movements were possible in the lower extremities, delirium ceased, sleep and consciousness returned. On March 5th patellar reflex noted, but walking without help was possible only after two months. He has now returned to his previous state of health; micturition is normal, and the perineal wound healed by first intention.

"Daudois considers the nervous phenomena as due, not to the general infection from the urine, but to the spinal cocainisation. This again is not toxic, but has probably caused some disturbance in the nutrition or functioning of the nerve cells or fibres."

Observations on Delirium and Spinal Cord Lesions following Spinal Cocainisation. Bristow (*Brooklyn Medical Journal,* Sept., 1902) reported eight cases of delirium and one of spinal sclerosis after subarachnoid injection of cocaine for analgesic purposes. The amount of cocaine used in each case was about ½ grain.

Case 1.—Man. 57. Wiring patella. No nausea or vomiting afterwards, and no headache second day and night after operation. Imagined someone trying to murder him. Next night noisy, and had to be restrained. At end of week fairly well.

Case 2.—M. 43. Anal abscess. No sickness. Much pain for one day. Severe headache for two days. On second day feared relatives might kill him. Otherwise rational; not noisy. On fourth day wanted to see relatives.

Case 3.—L. 45. Ischio-rectal abscess. Headache and nausea during first day. Much pain on second day. Wished to leave hospital and kill brother who he said had wronged him. Delusions lasted a week.

Case 4.—O. 40. Hæmorrhoids. No nausea; severe pain first night. Slight pain in head and back all through a week. Night after operation saw several men wanting to kill him for a wrong he had done. Next day wished to be protected from these men, who were in hiding. On the third day he was apparently himself.

Case 5.—M. 42. Hæmorrhoids. Nausea for twelve hours. Severe pain for two days. Next day feared enemies wishing to kill him. Better in 24 hours.

Case 6.—Man. Hæmorrhoids. No sickness. Very little pain. The first three nights imagined electric wires all over room and connected to him; enemies were turning on the current and killing him by inches. In morning patient would seem weak, and had tremor over body.

Case 7.—M. Varicose veins. No nausea. Slight headache for 36 hours. On second day wrote letter to doctor saying that some English friends intended killing him because he sympathised with the Boers. Better in a week.

Case 8.—C. Double prepatella bursitis. No headache. No mental symptoms for 5 days. Then got out of bed but denied this evidently believing the statement. Declares has clothing on when he has not. Speech very hesitating. Is queer, dirty, defæcates in bed. Nothing of this sort before operation. Involuntary micturition and urination.

Case 9.—S. 55. Hæmorrhoids. Nausea and vomiting for six hours. Severe pain for 2 days. Left hospital well in 2 weeks. Returned a month later complaining of lumbar and crural pain. Leg muscles numb and he has difficulty in walking. Says always well before operation. Depressed mentally. Examination by Dr. Brush showed spastic condition of legs with ataxic gait, increased knee jerks and ankle clonus.

Patient said he could not hold his water. Whole picture is one of combined sclerosis or degeneration of the lateral and posterior tracts of the cord. Brush doubted if the condition, which is generally of slow development was caused by the operation, which, however, may have hastened its development.

Brush thought that the other eight cases in discussion showed typical drug intoxication, and the short duration of the delirium shows that it is due to the drug itself, *e.g.*, alcohol, cannabis indica.

Bogart had only seen in a large experience one case of mental disturbance, and then was sure that the man had been mentally deranged before injection.

Death following Spinal Cocainisation. Bogart (*Ibid*), reported one death after after spinal cocainisation, but could not say that the man would have died if he had not received the cocaine. The patient showed the distinct effects of the subarachnoid injection, viz., tremor first, then perspiration, nausea and vomiting, *i.e.*, he showed the collateral and also the post-operative symptoms thereof. Also there was suppression of urine and slow development of cardiac weakness and depression of all the vital powers ending in death, so that though we may not wholly attribute death to the anæsthesia it cannot yet be excluded as a factor. In many of these cases it is impossible to tell just what the cocaine does and what it does not do.

The collator has rather fully abstracted the preceding cases as together they form a striking illustration of the possible drawbacks and dangers of cocaine injection. In the course of an extensive survey of all the literature on spinal cocainisation available to him he has not seen account of so many cases of delirium following the injection.

Spinal Analgesia with Eucaine a *and Tropacocaine.* Kopfstein, using eucaine *a*, observed in three out of four cases the following unpleasant after-effects :—Temperatures up to 40°C., headache, marked collapse, and violent pain about the seat of operation. He injected tropacocaine 40 times, and in 27 remarked no unpleasant sequelæ ; in 5 noted effects like those just mentioned, and in 8 also saw these same effects, but failed to obtain analgesia. (*Wiener Klin. Rundsch.* 49. 1902).

Experiences in Medullary Narcosis. Neugebauer (*Münch. Med. Woch.*, Oct. 7, 1902), after using minimal doses and most careful sterilisation of tropacocaine and instruments, has met with very severe symptoms of intoxication, and after study of the causes thereof concludes that medullary narcosis should only be used in operations on the lower extremities, where general narcosis is impossible if long lasting and deep anæsthesia is needed.

PATHOLOGY.

BY JAMES MILLER, M.D.

Experimentelle Studien über die Ecklampsie. Weichardt. Deutsche Medicinische Wochenschrift, August 28th, 1902.

New departures in serum therapeutics have been suggested within the last few years by the work of Ehrlich and his pupils. It was found that the animal organism possessed the capability of producing bodies antagonistic to cells themselves, as well as to their products. Everyone is familiar with the fact that if the toxin of an organism, such as the diphtheria bacillus, be injected into an animal there is produced in the serum of that animal an antagonistic body or antitoxin which is capable of neutralising the toxin. Ehrlich, Morgenroth and others have shown that if the blood of one species of animal be injected into an animal of a different species the serum of that animal produces a body which dissolves the red blood cells of the first animal and of that animal alone. This body is called a hæmolysin. It was soon discovered that after the injection of other cell elements similar specific cytolysins were produced. These are usually called cytotoxins. For example, Landsteiner, Metschnikoff and others have produced a body spermatoxin by the injection of spermatozoa, capable of bringing the movements of these cells to an end. Similarly antibodies can be produced to cell products, such as milk, causing them to coagulate (coaguline). Working on these lines several observers have recently been endeavouring to produce sera, which may be used in the treatment of disease. The following experiments by Weichardt are intended to throw light on the pathology, and a possible method of treating that very obscure disease Eclampsia.

Schmorl (*Archiv für Gynäkologie*, Bd. LXV., Heft 2) has recently shown that certain histological changes are to be found almost constantly in the organs after death from eclampsia; in the kidney degenerative processes in the epithelium sometimes amounting to necrosis, also thrombi in the glomeruli and capillaries of the smaller arteries and veins; in the liver areas of necrosis and thrombi were found; in the brain and heart muscle, hæmorrhages and areas of softening; but the important point was the discovery of placental emboli in the lungs.

As is well known the fœtal part of the placenta consists of villi which are covered with multinucleated cells—the syncytial cells. These villi clip into the intervillous spaces which are filled with the mother's blood, and which are in open communication with the maternal vessels. One can, therefore, easily understand how placental cells can escape into the maternal circulation.

The author points out how the attention of observers has been latterly more and more directed from the kidney as the main organ affected to the placenta. Schmorl laid the foundation for this change of opinion by his discovery of placental emboli. These emboli have however, been found in non-eclamptic cases.

Veit (*Centralblatt für Gynäkologie*, 1902, No. 7) has shown that the introduction of portions of placenta into the peritoneal cavity of animals caused albumen to appear in the urine. But it is only when the cytotoxin teaching is brought to bear on the question that an explanation of the connection of these emboli with eclampsia is obtained. The theory is as follows:—The placental cells contain a toxin which is set free in the blood of the mother by the action of the specific cytolysin (syncytiolysin) when portions of the villi escape from the placenta. This toxin can, however, be neutralised and rendered harmless if the blood of the mother contain or be capable of producing an antitoxin in sufficient amount. Cases in which eclampsia occurs would be the cases where the antibody was not present, or was not produced in sufficient amount. For the same reason one would not expect that every animal would develop eclampsia which was inoculated with the poison.

Weichardt's experiments were carried out as follows:—

Rabbits were the animals employed, as a disease somewhat similar to human eclampsia has been observed in pregnant rabbits. First of all human placental tissue, as free as possible from blood, was pressed and broken down into sterile normal saline solution, and injected repeatedly into animals under strict aseptic precautions. In four out of six cases a serum was produced, which possessed the power of dissolving placental cells, observed in a hanging drop. In other words a syncytiolysin had been produced. As all trace of blood had not been entirely got rid of the serum also possessed the property of dissolving red blood cells. In other words a hæmolysin had also been produced. Obviously the duty of the experimenter was first to find out if hæmolysed blood could produce rabbit eclampsia. Two rabbits were, therefore, treated with human blood obtained from a placenta. A strongly hæmolytic serum was thus produced, which was in its turn used to dissolve human placental blood. After complete hæmolysis had occurred, proved microscopically, the fluid was injected into three rabbits. One of the animals died after a few seconds with clotting of the blood in heart and vessels. Similar results have been observed by Birch-Hirschfeld with snake poison. The other two remained perfectly healthy, and when killed three days after, their organs were found normal.

Having proved that hæmolysed blood was of itself incapable of producing eclamptic symptoms, the next thing to do was to inject human placental tissue dissolved in the specific serum prepared as above. On July 16, a middle-sized, strong female rabbit was injected with 10 c.cm. of completely syncytiolysed placental particles, proved to be dissolved by the hanging drop method, in normal saline solution. The injection was made into the subcutaneous tissue at the root of the right ear. At first there was no obvious effect, but three days afterwards the animal appeared to be ill; clonic and tonic contractions of the muscles of the body set in, and the same evening it died in an exceptionally severe fit. On examining the organs the following conditions were found:—Hæmorrhagic necrotic areas in the liver, which showed a fibrine network when stained with Weigert's method. In the blood vessels numerous thrombi were found. Similar thrombi were seen in the vessels of the kidney. The lungs showed acute congestion with transudation of red cells into the alveoli in places. In all the tissue thrombi were found in the smaller vessels.

On the 22nd November another healthy female rabbit was injected with 10 c.cm. syncytiolysed mincings from human placenta. The animal was found dead two days after. Similar necrotic areas were found in the liver and thrombi occurred throughout the vessels of the body.

On the same date another female rabbit was injected with 10 c.cm. of syncytiolysed scrapings from human placenta. Three days afterwards the animal died with convulsive symptoms. The liver showed necrotic areas and thrombi. The kidneys showed cloudy swelling of the epithelium and thrombi in the vessels. The other organs showed numerous thrombi of a similar nature. Six other experiments failed, the animals remaining perfectly healthy. This was not surprising as the amount of toxin injected could not be ascertained, and one must not forget that with the toxin there would also be injected a certain amount of antitoxin previously formed in the first series of rabbits. In the positive cases this antitoxin must have been outbalanced by the toxin.

According to the theory upon which these experiments are based the occurrence of eclampsia is due to a deficiency in antitoxin. Treatment must therefore be along the lines of changing this deficiency into an excess just as in Diphtheria. Such a serum would be prepared as follows. Human placenta, from which the blood had been removed, would be dissolved in a previously prepared syncytiolytic serum. This emulsion which would contain much eclampsia-producing toxin would be injected into suitable animals from time to time; a quantity of antitoxin would thus be celled out, so that the serum could be employed in cases of eclampsia in the human subject.

Vorläufige Mittheilungen über einige Ergebnisse der Krebsforschung auf der I. medizinischen Klinik (*Deuts. Med. Woch.*, September 4th, 1902). E. V. Leyden and F. Blumenthal.

The authors first emphasise the importance of careful and elaborate investigation before anything is published on this most important subject. They have published their investigations although incomplete, largely because of the criticisms which have recently appeared in the papers on the investigations of Jensen of Copenhagen who has been working on similar lines.

This observer experimented on mice suffering from cancer. He succeeded in infecting other mice from these, and also in obtaining a cancer serum which caused the newly produced tumour to disappear again.

The authors have failed as others have in infecting animals with human cancer. Their investigations were confined to the dog. Tumours were extirpated from dogs suffering from cancer, these were cut up and an extract obtained. Rabbits were injected subcutaneously with this fluid for weeks at a time. A dog suffering from cancer was treated with the serum thus produced after the epithelial nature of the tumour had been proved by taking a sample. After several injections in the course of a few weeks a softening of the tumour took place. Specimens taken showed now numerous leucocytes between the tumour cells, which latter were few and far between. At last the tumour disappeared entirely. Further, the authors obtained a fluid from the freshly extirpated carcinoma of a dog by squeezing and extraction, which they used in the case of another dog suffering from the same complaint. After five months the tumour had almost disappeared and the animal was lively. The tumour was extracted and found to be malignant.

After these investigations on dogs, analogous experiments were carried out on human beings, of course with the greatest foresight. A fluid was prepared by pressing and breaking up a fresh human tumour extirpated aseptically. This was employed after it had been found to be absolutely harmless to animals. Of course, the investigations were only carried out on inoperable and hopeless cases of cancer. The injection was found to be quite well borne by the patients, never was there the slightest harm done. Death, of course, occurred in most of the cases in the natural course of events.

In two of the cases which came to the *post-mortem* table, in which the disease had existed many months before the commencement of treatment, although there was no appreciable difference in the tumour itself, there was no metastasis and glands previously enlarged had disappeared.

The first case was that of a woman of 69, suffering from urethral cancer, which had spread to the bladder. Under treatment the patient improved in health, and complained less. The condition of the urine also improved.

The second case was one of uterine cancer and cancer of the ovaries. No metastases were found after death.

The third case was that of a woman of 42, who was suffering from inoperable cancer of the uterus. When admitted she was in an advanced state of cachexia and exceedingly weak. She was treated at first with injections of serum obtained from goats treated for weeks with tumour extract. Later on she received the tumour extract itself. Under treatment her general condition improved, the tumour appeared to soften in places, and there was no increase in its size during ten months in hospital. The attacks of pain were fewer; she was able to leave her bed. The patient is still improving.

The authors admit that the results are anything but conclusive, but they consider that they are working on scientific lines.

Although the above-mentioned results are quite inconclusive, yet one cannot help thinking that if a method of treating cancer is ever to be discovered it will be along the lines of this paper, or more probably on the lines of the previous abstract. It is satisfactory to know that Ehrlich is devoting his energies to the elucidation of the problem.

Versuche über Fütterungs-Tuberkulose bei Rindern und Kälbern. Schottelius. *Münchener Medicinische Wochenschrift*, Sept. 30, 1902.

The following is interesting as bearing on the question of the correctness of Koch's dogmatic assertion of 14 months ago. Evidence is gradually accumulating to show that he was somewhat premature in bringing out his results.

The investigations were carried out during the past summer term in the Hygienic Institute of the University of Freiburg i/B, under the direction of Professor Schottelius. The following is only a preliminary announcement. In the experiments two cows and three calves were employed, of these one cow and one calf being used as controls. The animals were thoroughly investigated as to their condition, and were found to be perfectly healthy. They came of a race which is bred on the high ground in the neighbourhood of the Feldberg, the highest point of the Black Forest range. These animals are small and sturdy, and tubercle is unknown among them, and almost unknown among the peasants who breed them. Certainly no case of tubercle had been heard of on the farm from which the animals were obtained. The three calves were six weeks old and perfectly strong and healthy. The material used for infection was obtained from patients suffering from phthisis in the wards of the hospital. It was divided among the animals and mixed just as it was with their food; with grass in the case of the cows, with milk in the case of the calves. Each animal received about 50 grammes each time, and from May 25th to August 29th this was repeated 24 times. During this time the animals showed no signs of disease; especially noticeable was the absence of any rise of temperature. On September 20th, the infected animals looked less robust than the others, but there were no obvious morbid appearances. The animals were slaughtered and their organs carefully examined. The two control animals were found to be perfectly free from disease. On the other hand all three infected animals were found to be tubercular. The cow showed tubercular enteritis and marked swelling of the mesenteric glands, also caseation and calcareous degeneration of the mediastinal and bronchial glands, also caseating pneumonia with a few miliary tubercles on the pleura.

In the case of the two calves, markedly swollen caseated and calcified submaxillary and mesenteric glands were found. In all three animals, all the lymph glands of the body were found swollen with inflamed and caseating areas. Tubercle bacilli were found both on microscopic and bacteriological examination in the organs affected.

The author remarks that the importance of the announcement lies in the fact that all other sources of infection were excluded, and that the animals were simply under conditions such as might arise were one of the farm servants of a dairy consumptive.

REPORTS OF SOCIETIES.

British Medical Association.

Birmingham and Midland Counties Branch.

Session 1902-1903.

The First Ordinary Meeting of the Session was held in the Medical Institute, on October 9th, 1902, the President, Dr. H. Malet, in the Chair.

Pulmonary Osteo-arthropathy.—Professor Saundby showed a case of Marie's pulmonary osteo-arthropathy and illustrated it by photographs and radiographs. The patient was a young man presenting signs of bronchitis and bronchiectasis. He had been under treatment for the last eighteen months; he had well marked hippocratic fingers and the bones of the legs and fore-arms were decidedly thickened. Professor Saundby referred to a case published by him in the *Illustrated Medical News* for 1889, and showed copies of the photographs of that case. According to Marie all the cases recorded had some chronic pulmonary affection, and in Professor Saundby's former case, as well as in one published by Professor C. A. Ewald of Berlin, there was a malignant growth in the lung.

Punctured Wound of Femoral Artery and Vein in Hunter's canal.—Mr. Morrison showed a plumber, æt. 22, who had sustained this injury on June 5th last. The patient was using a clasp-knife to cut a sheet of lead on a board resting upon his left knee, when the knife slipped over the lower edge of the lead and plunged deeply into the thigh. The profuse bleeding which followed was partially checked by a ligature tied round the upper part of the limb by a fellow-workman, and within half-an-hour a tourniquet was efficiently applied by Mr. W. S. Mann of Edgbaston, though in the interim a great deal of blood had been lost, and the patient was acutely anæmic when admitted to the Queen's Hospital forty-five minutes after the accident. Surrounding the site of the puncture there was a large fluctuating swelling. Under an anæsthetic a probe was inserted about three inches along the track of the wound, which was then exposed through a free incision, giving exit of blood and clot. An opening was found in the roof of Hunter's canal, which space contained more clot. Venous blood continuously welled up in spite of tourniquet and digital pressure above. On opening the canal the bleeding was seen to proceed from the femoral vein which was then ligatured. The femoral artery was laid bare, the wound in it exposed, and two catgut ligatures applied, one above, the other below the wound. The incision through muscle was closed with buried catgut sutures, and the skin with silkworm gut. During the operation a pint of normal salt solution was infused subcutaneously into the chest wall, and after the operation another pint of similar fluid was injected into the rectum. The wound healed by first intention, patient leaving hospital on the nineteenth day. During convalescence, phlebitis of the internal saphena vein occurred, beginning in Scarpa's triangle; this was attributed by Mr. Morrison to bruising of the vein wall caused by forcible thumb pressure during the operation. The only ill effect remaining is anæsthesia of a small area of skin in the lower part of the leg supplied by the long saphenous nerve.

Skin Affections—Mr. Loxton showed two patients suffering from affections of the skin.

Foreign Body in Left Bronchus.—Mr. Haslam showed a dart, consisting of a needle with coloured wool attached to it, that he had successfully removed from the left bronchus of a girl, æt. 18. She had inhaled it when attempting to blow it out of a tube, and it had been in her chest for a fortnight. There had been repeated and violent attacks of coughing and the physical signs were those of some bronchial catarrh of the larger tubes. A low tracheotomy was performed and the dart was extracted without difficulty by means of a long pair of curved forceps, its exact position having been previously ascertained by the X-rays. The opening in the trachea was stitched up with catgut, and the greater part of the superficial incision closed by suture; a small piece of gauze was passed in for drainage. Recovery was uneventful.

Vermiform Appendix.—Mr. Barling showed a hugely distended Vermiform Appendix which had contained about half an ounce of pus and a concretion the size of a hazel nut. The specimen was removed from a boy who was the subject of intestinal strangulation and of appendicitis at the same time. The appendix which was gangrenous and very distended was adherent at its distal end to the ileum, and under the bridge thus formed about 15 inches of small intestine was strangulated. Before the strangulated intestine could be released without rupture of the appendix evisceration had to be performed. The patient made a good recovery.

Retirement of Mr. Francis Fowke.—It was proposed by Dr. Saundby, seconded by Sir James Sawyer, and unanimously resolved :—

"That this Meeting of the Birmingham and Midland Counties Branch of the British Medical Association desires to place on record its warm appreciation of the great and lengthened services rendered to the Association by Mr. Francis Fowke,

> the late General Secretary; and to express great regret that failing health should have compelled him to resign his appointment. He may be assured that he carries with him in his retirement the best wishes of the Members of this Branch with which he has been specially connected by many local ties."

Motor Insufficiency and Dilatation of the Stomach: their causes, diagnosis and treatment.—Dr. Saundby read a Paper on this subject, under the following headings:—Analysis of 100 cases of dilatation of the stomach; the great frequency of atonic dilatation; its relation to age, sex, and constitutional conditions—especially to neurasthenia; analysis of symptoms; diagnosis, and description of a special method of examination; prognosis; treatment. Mr. Jordan Lloyd, Mr. Heelas, Mr. Bennett May, Dr. Codd, Mr. Vokes, Dr. Stead, Mr. Oakes, Mr. Smallwood Savage, and the President, took part in the discussion; and Dr. Saundby replied.

REVIEWS.

THE TREATMENT OF TABETIC ATAXIA BY MEANS OF SYSTEMATIC EXERCISE.*

We have read this book with great interest. It is not only of importance from the point of view of practical treatment, in that it describes an original method of relieving one of the most distressing symptoms of a peculiarly distressing disease, but it also records the results of a most exhaustive study of the clinical manifestations of ataxia.

The book is divided into two parts, called respectively

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* The Treatment of Tabetic Ataxia by Means of Systematic Exercise. By Dr. H. S. Frenkel, Medical Superintendent of the Sanatorium "Freihof" in Heiden. Authorised English Edition, Translated and Edited by L. Freyberger, M.D. (Vienna), M.R.C.P. Lond., Hon. Physician to the St. Pancras and Northern Dispensary. London: Rebman, Limited. 1902.

"general" and "special." The first contains the clinical study of which we have spoken, and its proper understanding is important for the following out of the various movements described in the latter section of the book. Dr. Frenkel starts by distinguishing four degrees of severity in locomotor ataxia, beginning with that in which the patient is able to walk freely and without support, and ending with the most extreme affection in which both walking and standing are impossible. But he points out that it would be a mistake to assume that the severity of the disease is commensurate with the amount of impairment of locomotion; for the inability to walk may be caused by various factors, namely, (*a*) the degree of actual inco-ordination; (*b*) an alteration of the stability of the body produced by abnormal mobility in the joints; (*c*) an inability to control the movements of the muscles of the trunk; (*d*) loss of sensibility in the fingers which makes it impossible for the patient to hold a stick, and so on.

In dealing with the subject of co-ordination, Dr. Frenkel remarks that, although by the application of an electric current a single muscle may be caused to contract by itself, yet this is normally impossible in voluntary contraction, and that the healthy subject knows only co-ordinate movements. The factors which produce co-ordination are three:—the quality of the implicated muscle groups, the magnitude of their contraction, and the celerity of movement in the joint. The slightest irregularity on the part of one of these factors must necessarily disturb the whole movement, and interfere with the essential characteristics of a normal voluntary act, namely, that it shall effect its purpose with the expenditure of the minimum of force and the maximum of swiftness required for the occasion. These conditions are assured in health by the regulation and control of each movement and its antagonists. But in ataxia this regulated control is deficient or altogether wanting, and its failure is demonstrated—for instance in a simple hinge joint like that of the knee—by the following irregularities:—(*a*) abnormally rapid movements; (*b*) exaggerated muscular exertion, both of the contracting muscles and their opponents; (*c*) an unduly prolonged state of muscular contraction, which continues long after the maximum excursion has been reached; or (*d*) a kind of staccato movement in place of the normal continuous and regular movement met with in health.

In dealing with the causation of tabetic ataxia, Dr. Frenkel records his belief that in all cases, except those in the very earliest stage, a careful examination will establish the existence of loss of cutaneous sensibility. Of greater importance, however, is the diminution or loss of the sensation of passive movement in the joints, and he maintains that there is no exception to the rule that in every tabetic patient in whom ataxia is either manifest or can be demonstrated by suitable measures, loss of articular sensibility will be found to be present. The examination for this loss of passive movement in the joints is made by moving the peripheral part of a limb slowly round the axis of the joint, while the central part is kept in a fixed position. In order to carry out the examination satisfactorily it is essential that the movement should be made very slowly, that even the slightest hint by pressure or otherwise should be avoided which could enable the patient to make a guess at the direction and nature of the movement, and that all voluntary contractions around the joint should be avoided by the patient during the examination. The last point is of the greatest importance, for it is by these small voluntary contractions that the patient gains a knowledge of the position of his limbs at any moment. To this loss of articular sensibility Dr. Frenkel attaches chief weight in the causation of ataxia. But another element of almost equal importance is that of muscular hypotonia, and a most interesting section is devoted to the study of this phenomenon, which, it appears, tends especially to pick out certain groups of muscles in the lower extremities, such as those about the knee-joint, leaving others, like the muscles of the hip, comparatively untouched.

The second part of the book deals with Dr. Frenkel's method of re-educating the sense of co-ordination by the practice of systematic and regulated movements. This part—like, indeed, its predecessor—is admirably illustrated by a large number of photographs. By this method many cases of ataxia are greatly improved, as far as that symptom itself is concerned, though it need hardly be said that the treatment has no effect upon the lightening pains and other manifestations of the disease. It is, however, claimed that even the paralysis of the bladder is, to some extent at any rate, capable of improvement. Cases with signs of meningeal irritation, as shown by a constant dull pain and paræsthesia attacking the muscles of the back and sometimes the extremities also, are unsuitable for the treatment until the disappearance of the symptom. Lightening pains are no contra-indication; it is only necessary to wait until the crises are over before again beginning the exercises. Very severe ataxia, coupled with blindness and almost complete loss of sensation, shows that the case is beyond the scope of the treatment. Extreme degrees of hypotonia, again, may necessitate the correction of the faulty position of the joints by means of mechanical appliances previous to the commencement of the exercises. Heart disease does not necessarily exclude the treatment, but great care must be given to the supervision of the case, and to the selection of the exercises and their duration. Finally, proper care must be taken to control and protect the patient during the treatment, for it must not be forgotten that tabetic patients are liable to sudden and unexpected falls, due to the giving way of the hyper-extended knees. Apart from the actual damage thus liable to occur, such accidents have a very unfavourable effect on the course and prospects of the treatment.

Dr. Freyberger's translation and adaptation of the original has been very well done. He states in his preface that the book is rather to be looked upon as an adaptation of Dr. Frenkel's monograph to the requirements of the medical practitioner than as an actual translation. Here and there slips in the wording are to be found, and we would suggest that the phrase "sensation of hot or cold" on page 21 might with advantage be altered, and that it would be difficult to "miss the loss" of cutaneous sensibility as is suggested on page 59. In general, however, the wording is admirably clear and the style interesting and easy to follow.

TEXT-BOOK OF ANATOMY.*

Considering the preponderating influence of the Edinburgh School in anatomical teaching, it is not a little surprising that no standard work on anatomy has emanated from the school, or its pupils, within recent years. This anomaly and deficiency has at last been rectified, and that in a way which must be eminently satisfactory both to the school and the teachers and students of anatomy.

It must not be thought that the work is designed for any particular school, and though written by former pupils of Sir William Turner (with one exception) its teaching represents that of the foremost teachers of anatomy in the British Isles. It was a happy thought of the editor and his collaborators to dedicate the work to Sir William Turner, and it must be at once admitted it forms a worthy tribute to a worthy master.

In a text-book written by different contributors there must of necessity be some disparity in the treatment of the various articles, but taken altogether the work before us is remarkably uniform, and overlapping and clashing of opinions are conspicuously few.

The book opens with a section on General Embryology by Professors Young (Manchester) and Robinson (King's College). It is a model of conciseness and clearness, and forms a sound introduction to the description of the development of the individual systems given under their respective headings.

The subject of Osteology is comprehensively dealt with by Professor Arthur Thomson (Oxford). The chapter on Craniology will be found instructive and serviceable, especially by those interested in the anthropological aspect of anatomy. We welcome, also, some pertinent remarks on the architecture of individual bones, but we think the insertion of a few comparative notes would still further enhance the usefulness of this section.

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* Text-Book of Anatomy. Edited by D. J. Cunningham, F.R.S. Edinburgh and London : Young J. Pentland.

The articles on Arthrology and Myology are written by Dr. Hepburn (Edinburgh), aud Professor Paterson (Liverpool), respectively. Both are concise, lucid, and thoroughly up to date. Here, again, an extension of the sections on Morphology and the inclusion of some remarks on the comparative anatomy of joints and muscles would, in our opinion, be a distinct advantage.

Professor Cunningham (Dublin) has undertaken the chapters on Brain and Spinal Cord, the Respiratory System and the Ductless Glands. All are written in his characteristic lucid style, and the article on the Brain and Spinal Cord is a masterly exposition of an abstruse and everchanging subject.

The Spinal Nerves are described in a well written article by Professor Paterson. It includes some excellent tables and diagrams, which will greatly facilitate reference and aid the student's memory.

The sections on the Organs of Sense and the Integument are written by Professor Howden (Durham), and, though somewhat short, they do not lack lucidity and pleasantness in reading in consequence, and the information given will be found ample for all examinations. The account of the Vascular System is given by Professors Young and Robinson, and is in every way exhaustive and accurate. An excellent account of the development and morphology of the vascular system is appended.

In the article on the Digestive System by Professor Birmingham (Dublin) there is much which is at variance with the conventional descriptions of the topographical relations of viscera, as a result of the adoption of the formalin process of hardening and preserving. This will, no doubt, be inclined to confuse the student at first, but there is every reason to think that the method and descriptions will soon become universal.

Professor Dixon's (Cardiff) article on the Urogenital System is thoroughly comprehensive and up to date. Here, again, it will be noticed that the formalin process has replaced the older methods in the preparation of specimens containing viscera whose topographical relations have to be accurately defined.

Lastly, we have an excellent article on Surface Anatomy by Mr. Harold J. Stiles (Edinburgh). The descriptions and diagrams are all that can be desired, although some of the latter strike one at first as being somewat intricate in consequence of the multiplicity of colours employed.

The whole work forms an elegant volume of over 1,300 pages. The bulk has been reduced at the expense of the paper, which is somewhat thin. The print is good, though the lines are rather close together. The diagrams are original, and exceedingly well-executed. Being mainly the work of one artist and printed from wood blocks, they are more uniform in merit and distinctness than those found in many modern works in which process blocks are employed, or where the illustrations are culled from many sources. We have no doubt but that Cunningham's "Text-Book" will at once take its place as a standard work on Anatomy.

HYGIENE AND PUBLIC HEALTH.*

THE value of this essentially practical volume is evidenced by the fact that a second edition has become necessary within a year of the publication of the first, and that a somewhat smaller volume on the same subjects—by Dr. Parkes—ran through five editions in ten years. In the face of these facts it is evident that any attempt at a criticism becomes quickly merged in an appreciation. Obviously, in addition to the medical profession, such a text-book as this must appeal to a considerable number of lay readers, those, for instance, who are engaged in sanitary

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[*] Hygiene and Public Health. By Louis Parkes, M.D., D.P.H. (Lond.) and Henry Kenwood, M.B., D.P.H., F.C.S. Second Edition. London: H. K. Lewis.

work, and it is therefore interesting to note in the preface that the authors "have endeavoured as far as possible to convey information by the use of generally understood terms, and the avoidance of those which are only of technical application." This attempt, which we consider is much to be commended, is especially noticeable in the chapter on the Contagia and Communicable Diseases in which the question of the germ theory of disease is dealt with in a lucid and temperate manner, and should be understandable to the lay reader by reason of the fact that the authors avoid as far as possible the use of those complicated terms, with which it pleases modern pathology to cumber its phraseology. The authors state that they "are much indebted to Dr. D. N. Nabarro for his advice and assistance in the preparation of" the above mentioned chapters.

In the chapter on Diet a series of excellent rules is given for the feeding of infants, and we note with interest that attention is here drawn to the fact that "Dr. Reid has demonstrated statistically the evil that results from the prevailing practice in many manufacturing towns of mothers leaving their homes during the day to work in factories. Children are as a consequence deprived of their natural food and of the care of their natural guardians."

We are convinced that a large amount of infant life is needlessly lost in our large cities, and that it is high time that steps should be taken to provide public accommodation for infants during the absence of the mothers at their work. We do not think that the alternative suggestion—to extend the period of compulsory absence from work after a confinement from one month to three—would prove workable.

Under the heading of the Disposal of the Dead we are pleased to see the definite statement that cremation is "the most sanitary method of disposal of the dead," and that there are special reasons for its use in the case of the bodies of those who have died of infectious disease. We commend also the remark that "the main objections which are raised against cremation at the present day are based on sentimental and religious grounds, which time and education will remove."

The book is brought to a conclusion by a most valuable chapter on Sanitary Law and Administration, which will be of great use not only to members of the medical profession, but also to the numerous members of the Public who are interested in the furtherance of sanitation.

DISEASES OF THE INTESTINES.*

This volume completes Dr. Hemmeter's work, and embraces those subjects which, he says, occupy the borderland between medicine and surgery. It will, therefore, be welcomed by both the physician and the surgeon, and read with profit to both.

Chapter I. treats of Appendicitis. We notice that the author recommends morphia early in appendicitis. "The early use of purges and the administration of copious enemata should be permitted only according to special indications" (p. 51). We are then told that "if symptoms of occlusion set in there is nothing left but to attempt to remove the coprostasis by means of enemata. If these are unsuccessful purges must be used even at the risk of having the increased peristalsis cause aggravation of the inflammation." The particular purge to be used is not specified. We think statements such as these may mislead. While very satisfactory results are obtained by small and repeated doses of a saline, such as sulphate of magnesium, at an early stage of the disease, we do not believe in purging by force, and if there is one drug which requires the utmost care in its use it is opium. In fact the routine use of opium is greatly to be deprecated.

Infectious granulomata of the intestines are well described in chapter II., the author giving some of the chief arguments raised by Koch in reference to the question of primary intestinal tuberculosis.

By far the largest chapter in the book is that dealing with

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* Diseases of the Intestines. By John C. Hemmeter, M.D. Vol. II. London : Rebman, Ltd.

Intestinal Occlusion. The writer divides the subject up in a manner which greatly assists the reader in grasping the facts.

The intestinal parasites are exhaustively described—perhaps too fully, as many forms are mentioned, the clinical features of which are not as yet sufficiently defined.

The last chapter gives the diseases of the rectum, and includes several paragraphs on the method of examination.

The illustrations are among the best we have seen, and the printing is good. The work is a valuable one, and contains a vast amount of carefully systematised information.

A MANUAL OF SURGERY.*

The rapid appearance of five editions of this most deservedly popular work speaks in far higher terms of its merits than can any eulogy from the pen of its most ardent admirer. It was but four and a half years ago that the first edition was published. Since that time about 50 pages of reading matter have been added, together with 29 excellent plates of microscopical sections and skiagraphs, and many other lucid illustrations and diagrams. This is not a work that can be lightly skimmed through, for almost every line contains something worth knowing. The volume must be read carefully, and read more than once, and the student who is prepared to do this will, we believe, find himself equipped for all but the very highest surgical examinations. For such as would undertake to acquire the Fellowship, or desire to be Masters of Surgery of some University, the manual will form a fitting groundwork for other treatises dealing with the subject in its more specialised branches. It is a sign of the times that the authors should have seen fit to eliminate the chapter on inflammation from the first place in the present edition, and should have substituted one on the science of the causation of this phenomenon. We are glad to welcome this token of the acknowledgment, that since prevention is possible, prevention is better than cure.

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* A Manual of Surgery. By Rose and Carless. 5th Edition. University Series. London : Ballière, Tindall, and Cox.

Diseases of the eye, we notice, are omitted. As the throat, ear, and skin are dealt with, would it not be advisable to have a short and concise chapter on the eye for the sake of completeness? This would not necessarily make the book very much more voluminous.

As it is, we can heartily commend this work both to elementary and advanced students, and also practitioners and others wishing to keep up with the times.

A TEXT BOOK OF MEDICINE.*

The second volume of the new edition of Fagge's Medicine fulfils the promise given by its predecessor, in that it shows evidence of the most careful and thorough revision. The arrangement of subjects has been somewhat altered since the appearance of the former edition, and the diseases of the heart, which formerly occupied the end of the first volume, are now included in the second, whilst some other subjects, for example, the various forms of rheumatism, have been transposed in reverse order. The section on diseases of the heart included in the present volume strikes us as exceptionally good, and we are inclined to give it the first place in the scale of excellence. The alimentary and respiratory systems have also been thoroughly revised and with few exceptions embody all the latest work that has been done on those subjects. Here and there exceptions occur, and some recent work is unrepresented, as, for example, in the discussion of the pathology of asthma, which omits to notice the view which attributes that disorder to spasm of the diaphragm and perhaps other inspiratory muscles. But such omissions are few and far between. We can unhesitatingly recommend this edition to students and practitioners of medicine as standing in clinical interest far ahead of most text-books of medicine.

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*A Text-Book of Medicine. Begun by the late Charles Hilton Fagge, M.D., F.R.C.P., sometime Physician to Guy's Hospital; completed after his death and since revised and re-written by Philip Henry Pye-Smith, M.D., F.R.S., F.R.C.P., Consulting Physician to Guy's Hospital. Fourth edition. Vol. II. London: J. and A. Churchill. 1902.

CHRISTIAN SCIENCE, MEDICINE AND OCCULTISM.*

This is a very moderately worded consideration of the fallacies, to use the mildest expression, of the so-called "Christian Science" movement. Dr. Moll, it is needless to say, takes an entirely correct view of these fallacies, and attributes the successes of the system entirely to the element of suggestion. Yet we hardly think that his condemnation of the whole thing is strong enough. The fact that relief of immediate distress results in some hysterical cases is in our opinion no palliation of the mischievous nonsense on which the whole system is based. We do not think that anyone can expose himself to the influence of humbug of this sort with impunity, least of all the hysterical people who are most likely to be influenced.

THE MEDICAL ANNUAL.†

THE Medical Annual for 1902 contains many interesting and valuable articles. Dr. R. Hutchinson contributes one on Acute Rheumatism which embodies some important additions to our knowledge of this disease. There are articles on Syphilis by Drs. Norman Walker and Priestley Leech that are well worth study. The article on Blood is a careful *résumé* of the year's work in a subject that has now become of great importance. Dr. A. H. Carter again contributes one of the chief articles on the Heart, in which are discussed some very important methods of treatment. Among the surgical articles those on Hernia, Appendicitis, and the Stomach, call for special notice. As usual the sections on special subjects, such as the Ear, the Eye etc., are instructive and tend to meet the requirements of all.

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*Christian Science, Medicine and Occultism. By Albert Moll, M. D., Berlin. London: Rebman, Limited. 1902.

† The Medical Annual for 1902. Bristol: John Wright & Co.

The Appendix on New Appliances, Books of the Year, etc., is a well known feature of the Medical Annual, and certainly enhances the value of the book.

The Publishers are to be congratulated on their issue for 1902.

EDINBURGH MEDICAL JOURNAL. VOL. XI.

Among the most noteworthy papers in this volume are Membranous Colitis, by Dr. Michael G. Foster; Hourglass Stomach, by Dr. B. G. A. Moynihan; The Heart in Diphtheria, by Dr. Charles Bolton; Dr. Byrom Bramwell contributes an interesting account of a case of chloroma.

The True Elixir of Life is the title of an article by John Haddon, M.A., M.D., in which we are solemnly warned against eating animal food if we value our life and health—interesting, but not convincing.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

We are requested to state that the next award of the Alvarenga Prize, amounting to about one hundred and eighty dollars, will be made on July 14, 1903, provided that an Essay deemed by the Committee of Award to be worthy of the Prize shall have been offered.

Essays intended for competition may be upon any subject in Medicine, but cannot have been published, and must be received by the Secretary of the College on or before May 1, 1903.

New Books, etc., Received.

From Baillière, Tindall and Cox—

A Manual of Surgery for Students and Practitioners. By WILLIAM ROSE, M.B., B.S. Lond., F.R.C.S. and ALBERT CARLESS, M.S. Lond., F.R.C.S.

From Macmillan and Company, Limited—

A Manual of Medicine. Edited by W. H. ALLCHIN, M.D. Lond., F.R.C.P., F.R.S. Ed. Volume iv. Diseases of the Respiratory and of the Circulatory Systems.

From Charles Griffin and Company, Limited—

The Work of the Digestive Glands. Lectures by Professor J. P. PAWLOW. Translated into English by W. H. THOMPSON, M.D., M.Ch., F.R.C.S. (Eng.)

From Alexander Gardner, Paisley—

Practical First Aid. By WM. ROBERTSON, M.D., D.P.H. Third Edition.

Carmina Medici. By WILLIAM FINDLAY, M.D.

From H. K. Lewis—

Cancer of the Uterus. By ARTHUR H. M. LEWERS, M.D. Lond., F.R.C.P. Lond.

A Handbook of Surface Anatomy and Landmarks. By BERTRAM C. A. WINDLE, F.R.S., Sc.D., M.D., M.A. (Dublin). Third Edition.

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THE

BIRMINGHAM MEDICAL REVIEW.

DECEMBER, 1902.

ORIGINAL COMMUNICATIONS.

AN ADDRESS
ON
ACUTE MANIFESTATIONS OF CHRONIC DISEASE*

BY J. MITCHELL BRUCE, M.A., LL.D., M.D., F.R.C.P.

Mr. President, Ladies, and Gentlemen,

I have been oppressed by the feeling in the preparation of this address that it is unworthy of the occasion, and of the honour which your Society has done me by asking me to follow the distinguished men who have appeared before you in previous years. I have been conscious that one who enjoys the high privilege of opening your winter session might well have had something less commonplace to offer you in return for the respect you show him than such a paper as I might write on the Acute Manifestations of Chronic Disease. And yet I should like you to accept this introduction as an apology for my treatment of the subject, not for the subject itself, nor for the selection of it on an occasion like the present.

I believe we cannot too fully bring it home to ourselves that what we commonly call "acute disease" is in many instances nothing else than an acute illness in the course of a chronic disease. It is certain that this relation of acute to chronic disease, whilst acknowledged in a general way, is from one cause or other readily overlooked or disregarded in our routine work, the acute element alone being recognised, the chronic element —the disease proper, possibly of great gravity—ignored. What is even more important, if the significance of an acute illness be correctly observed, it is not always appreciated in its practical bearings. These are the different aspects in which I propose to introduce this subject to your notice. Let us examine it in these different aspects. If it be presented to you as clearly and fully as it deserves, it may serve to interest you for an hour now, and prove of practical service to you in the future.

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* Being the Inaugural Address at the Opening of the Winter Session of the Midland Medical Society.

I will try to make my contention clear to you at once by means of a concrete illustration. A middle-aged lady, of good social position, and enjoying, as far as her many friends could see, excellent health, woke up one morning with pain in the abdomen and was sick. She took an aperient, but still felt unwell. On the third day she went to a picnic, and the same night became definitely worse. The next morning she was seen by the doctor, who diagnosed appendicitis from the history and symptoms, and this opinion was confirmed the following day by the appearance of fulness in the right iliac fossa, with tenderness somewhat above and behind McBurney's point. The temperature was moderate—about 100°; aperients brought away hard white stools. The ordinary treatment of appendicitis of somewhat mild type was employed, including enemata, which removed more hard fæces, with a good deal of local pain and the patient was distinctly better. But the improvement did not continue. Pain returned; nausea, ending in a little vomiting, became a prominent symptom; the abdomen was more distended, and the motions were found to contain mucus and blood. After a few more days, during which these symptoms continued, definite coiling was developed in the abdomen; and now the diagnosis began to clear up. The case was not one of acute appendicitis of mild type, but of chronic intestinal obstruction. Operation was had recourse to, but without success. A ring-shaped growth was found in the descending colon, which appeared. judged by its characters, to have been forming extremely slowly, without producing discomfort or disorder of any kind.

When we review this case we see how it illustrates the various points which I have mentioned. What was regarded as a primary disease of acute course, whether gastro-enteritis or appendicular affection, was an acute manifestation of an insidious pathological process in the bowel, which had been progressing for months previously. The relation of the illness to the chronic disease was overlooked; and the failure to appreciate it led to an entirely incorrect prognosis, both immediate and remote, and to inappropriate treatment. The case, as a whole, left an unsatisfactory—not to say unhappy—impression on one's mind, even whilst one felt that it was bound to end fatally sooner or later; and yet, unless I am mistaken, the errors that were committed in connection with it are not uncommonly repeated by us in different ways and from different causes. What these causes are—at any rate, the chief of them—I propose now to inquire.

In the first place, then, to revert for a moment to the case which I have just narrated, you will agree with me that it was one of real difficulty diagnostically; one in which the history in particular was of a deceptive and misleading character. Probably one might have reached the truth if one had remembered the accepted aphorism that "the first evidence of chronic intestinal obstruction may be acute intestinal obstruction." Be that as it may, the case serves to illustrate what I would venture to call the first and least blameworthy way in which we may fail to appreciate that an acute illness with which we are suddenly called upon to deal, is but an acute manifestation of a chronic disease, namely, *essential difficulty of diagnosis.* There may be little or nothing in a case to suggest the relation, whilst there may be very much in it to support another and even more probable explanation of the facts; and the more obvious diagnosis is chosen.

But our failure is more often due to difficulties of other kinds. We suspect that an acute illness which we are called upon to treat is something more than appears on the surface. We feel morally convinced, as the saying goes, that there is another, possibly a graver, disease beneath it, but we fail to confirm our suspicions from *want of evidence*, whether in the patient's history or in his present condition, of the existence of a chronic disease with which the acute illness could be connected. The attack appears to be an isolated event in the patient's medical experience. Either the inquiry into the course of the case is not close enough, or it is baulked by the truth being forgotten, or, for some reason or other, withheld from us. I remember an instance of this difficulty which was related to me many years ago in another connection by my old friend, that acute observer, Sir Richard Quain. He was asked to see in consultation a lady of middle age who had developed a rapid tuberculosis of the lungs during attendance on her son dying of the same disease. Quain was no believer in the infectious origin of phthisis, and you can understand the satisfaction with which he informed the family practitioner that he recognised in the patient a lady whom he had himself treated for tuberculosis twenty years before. She had of course been tuberculous ever since, and the present was but a fresh manifestation of her chronic disease; but the medical attendant she was now under had failed to get at the truth, and exactly reversed the order of what was very likely after all an instance of infection.

But not only the history, the very phenomena—the symptoms and signs—of chronic disease, which we naturally look for and trust to as guides in such a case, may be wanting. The sole evidence before us that an acute attack for which we are treating our patient is but a manifestation of a grave pathological change of chronic course may be the sudden and brief event itself. Perhaps the best example of this cause of failure to determine the real significance of an acute illness of importance is afforded by some instances of hæmoptysis. How often has it occurred to all of us to meet with hæmoptysis, of every degree of severity, which was accompanied by no physical signs in the chest that could be described as morbid, nor by any disturbance of function that deserved the name of a symptom, and which left positively no trace behind of its essential nature! Let me mention a case in point. A lad of 17 was brought to me fifteen months ago complaining of weakness only. His father had been alarmed by the occurrence of hæmoptysis four weeks previously, and wished to have an "independent opinion." Thorough examination of the chest failed to yield any morbid signs, beyond trifling impairment of the resonance at the right apex. But I declined to discount the importance of hæmoptysis at 17, and I was strengthened in the serious view I took of the case prognostically by ascertaining that the mother had died of pulmonary tuberculosis. The confirmation of the diagnosis was reached later, when I learned from his regular medical attendant that the patient had had an attack of quiet dry pleurisy eighteen months before the hæmoptysis.

Our single guide in cases of this character, our safeguard in prognosis and treatment, is experience. We have had much occasion to follow the after-history of the subjects of hæmoptysis; and we recognise that for all practical purposes hæmoptysis of this type means tuberculosis, which will sooner or later manifest itself again in the same or in some other and worse fashion. But how can we expect the young practitioner, fresh from hospital, to appreciate the bearing of a case of this kind? Although he be trained on more scientific and practical lines than his predecessors of our time, the newly qualified man still leaves his hospital and school of medicine with an acquaintance with disease in great measure theoretical. He enters practice with an attitude of mind that may be called artificial, and his early observations of acute disease, which strike him most forcibly and impress him most deeply, serve only to confirm it in him. And so the hæmoptysis passes; no evidence of phthisis remains or is developed; and the existence of tuberculosis is presently forgotten. It takes him years of close observation and careful thought to have this truth brought home to his mind. I can fancy some of you saying to yourselves that of course it would occur to all of us, even the most inexperienced, that hæmoptysis is not an acute disease *per se*, but a complication or incident of chronic tuberculosis. I acknowledge that this is so when hæmoptysis occurs in the course of a case of phthisis under treatment. But when hæmoptysis is the first and only evidence of the disease to attract attention, its significance is certainly not always appreciated.

To begin with, we are blinded to the truth by *the circumstances attending an acute illness.* These may impress and influence the most experienced of us so much as to prejudice our judgment and our management of the case. The circumstances connected with a sudden, grave, and possibly critical illness absorb so much attention, and raise questions of such magnitude and urgency in respect of the prospects of recovery and the means of treatment, that not only the minds of the patient's friends, but the mind of the doctor himself, are diverted from remote and more important considerations. The present only is regarded: the suffering, the danger, the immediate result. Consider, for instance, the following case: A woman of 32 was admitted into Charing Cross Hospital in July last for violent pain in the abdomen. She had been to the Charing Cross Station to see a friend off, and went thence to the Embankment for a walk, when she was suddenly seized with severe pain in the hypogastrium and down both thighs. She was brought at once to the hospital. The note taken on admission is to the effect that she complained of pain in the lower region of the abdomen, particularly the right side, which was comparatively full, with impaired respiratory movement; that the whole of the front of the abdomen was exceedingly rigid and tender; but that there was no definite tumour. The temperature was already 102°F. You will agree with me that the circumstances attending the invasion in this case and the patient's admission into hospital were sufficiently striking, not to say dramatic, to rivet one's attention on the present; to suggest perforation of the stomach, or at any rate nothing less grave than acute appendicitis; and to divert one's thoughts from the past. And yet the key to the diagnosis, which had to be made without delay, was the patient's previous history, not the incidents of the acute attack. We discovered on inquiry that for the last two years she had suffered occasionally from abdominal pains as the result of fatigue or exposure to cold and wet, and indeed that three months before she had actually had to lie up on account of them for a few days, although she did not send for the doctor. Intrapelvic examination revealed that the uterus was partially fixed, and that the right Fallopian tube and ovary were enlarged. The case was one of chronic disease of these structures and pelvic peritonitis. If this case had occurred to one of us in private practice, where excitement runs high and deliberate inquiry and examination are more difficult to carry out than in a hospital, we probably should have failed to reach the correct diagnosis. And if the danger pass and the result be recovery, the sense of relief and satisfaction is supreme. An attack like this comes to be looked upon as an isolated occurrence, and recalled as an acute disease. The patient and his friends remember with thankfulness that he was "cured." The doctor passes on to the next patient, whose case, of equal interest and urgency, in its turn absorbs his attention, and forgets in the press of work that whilst recovery has occurred a grave, and possibly mortal, disease is left behind.

Still more readily may we forget the chronic element *if the acute element take the form of a substantive disease* so-called. So far I have mainly spoken of acute *phenomena* in the course of chronic disease—of hæmorrhage, of abdominal pain, of vomiting, and collapse. None of these constitutes by itself an acute disease; and you will say, and I agree with you, that they ought not to be permitted to deceive us if we exercise proper care and judgment in our clinical work. But when acute manifestations of chronic processes possess all the characters and the importance of independent diseases, they readily monopolise our attention, and lead us astray in diagnosis and treatment. A young man of delicate build, but obviously sound, was taken with acute pleurisy. He was very ill; the fever ran high; the fluid rose in his chest; his people became very anxious about him; he was tapped, and in a few weeks a dangerous illness was safely passed, and the patient able to return to work. Our diagnosis was acute pleurisy with effusion, with characteristic clinical symptoms and signs accompanying it, with a definite invasion, dry stage, stage of effusion, increase of fluid in the pleural cavity, urgency of constitutional and local distress, performance of an operation, relief, and recovery. Was not this an acute disease? In the fullest and most correct sense of the term it was not. The diagnosis—the name—"acute pleurisy with effusion" proved to be incomplete and therefore incorrect. The disease was tuberculosis. The pleurisy was followed two years later by pulmonary phthisis, and when fresh inquiry was made into the patient's history it was found that he had had strumous glands removed from his neck as a boy, and a passing hæmoptysis at 18. We had been so much occupied with the observation of the physical signs of the pleuritic attack, with the anxiety of the patient's relatives, and with the performance and success of paracentesis, so satisfied and relieved by the issue of the case in restoration of health—in a word, the case had been so complete as an instance of acute disease—that we failed to inquire into its origin and neglected to anticipate the future.

Acute pleurisy would appear to be the disease that of all others is the one most likely to lead us astray in this respect. I shall never forget being asked by an old friend of my own, a distinguished member of our profession, to examine his chest for a stitch in the side, and finding a small patch of dulness there and weak friction sound. I confess I thought lightly of the observation and its possible significance for the first day; but when on the second day I discovered that there was polyuria and albuminuria, I became alarmed at once, and reasonably so, for this was the beginning of an illness which proceeded to pericarditis, and ended fatally within a fortnight. So with pleurisies of other and possibly more obscure origin. Last year about this time I drew attention in the Hunterian Lecture to the frequent association of acute affections of the pleura and lungs with chronic disease within the abdomen, such as carcinoma and hydatid of the liver, gastric ulcer, and appendicitis. This is a relation which is peculiarly easily overlooked unless one be fully convinced of the soundness and practical importance of my contention: that the apparent completeness of the acute illness in its objective characters as a substantive disease must not be allowed to divert us from searching for the main or primary process.

In addressing a Society like yours, I need not do more in passing than refer to those instances of failure to observe the due relation of an acute illness to a chronic disease which are *the result of haste, thoughtlessness, or clinical inattention.* These are unfortunately not altogether uncommon failings on the part of some of us when our interest and power of observation are temporarily exhausted by prolonged, unremitting, anxious work. It is under such unfortunate circumstances as these that we call an attack of urgent paroxysmal dyspnœa by the name of "asthma," and omit to diagnose in one case aortic aneurysm, in another case diabetes or uræmia, of which the patient dies in a few hours. Similarly, the exercise of proper care and the expenditure of a little more time would prevent us from falling into the error of speaking cheerfully of a case of sudden faintness which is nothing less grave than a syncopal seizure in general paralysis of the insane.

This introduces me to the next aspect of my subject. Even if we have determined the existence of a chronic pathological process beneath an acute illness, and noted the relation of the one to the other, *the observation and the considerations which it suggests are not always appreciated in their full practical bearings:* they are not applied in prognosis and treatment. An important patient of ours, a wealthy lady of 60, is in bed with severe bronchial catarrh. We recognise that she is thoroughly gouty, for we have had her under our care at different times before—for acid dyspepsia, sciatica, vesical irritability, and eczema, one or more. But now that she is acutely ill, have we the courage of our convictions? Do we deny her the champagne for which she craves, to relieve the sinking, lowness, prostration or faintness, as she variously calls it, which is a characteristic feature of the bronchial attack? I fear not. We do not act up to our diagnosis; we treat the acute phase of the disease only, and that phase unwisely. Or in a case of gastric ulcer, although we may have been struck by the observation again and again that hæmatemesis occurs very commonly *per menses*, do we always take the trouble to direct our women patients, the subjects of this disease, to spend the period in bed on several subsequent occasions in order to prevent a recurrence? These are very ordinary instances of the want of thoroughness which is displayed in the application of what we are pleased to call our "convictions," but they serve to impress on us one of the most important practical bearings of our present subject—I mean its relation to treatment, to which I will presently return.

I believe you will now agree with me that the observation, recognition and sufficient appreciation of the intimate relation that often exists between acute illness and chronic disease involve issues and actions which we cannot afford to neglect —which, indeed, we ought to keep constantly before our minds in our daily rounds. But it is well to be definite. Let me put the question frankly and plainly. When we meet with what at first sight appears to be an acute disease, what advantages are to be gained by taking the time to consider whether it may not be an acute manifestation of a chronic process? With your permission I will attempt to answer the question categorically.

And, first, I pass over with a bare mention the value of correct knowledge for its own sake, and would remind you that an acute illness if properly investigated, often *directs our attention to the existence of a disease* which has lasted for an indefinite length of time but been entirely unsuspected, and which it is of vital importance that we should recognise. A few weeks ago I saw in consultation a little lad of 13 with pericarditis. He had been enjoying his holidays much too well—playing cricket, and had broken down with the usual "chill." But it was easy to determine that this was no primary disease. In addition to those of acute pericarditis, there were all the ordinary signs of chronic valvular disease, of the existence of which his parents had no knowledge, but the discovery of which in this alarming way would be of infinite importance to them in the future. Unfortunately the discovery sometimes comes too late. I recently met with a case of mitral stenosis in a lady of 50, which had remained unrecognised until it came under notice by an acute illness. The lesion had been invaded by septic micro-organisms, and ulcerative endocarditis was the result.

In the second place, to have determined and to know that an acute illness is but a manifestation of a chronic disease puts us in an advantageous position for *instituting immediate treatment.* You will not require me to prove the correctness of this statement. It agrees with our daily experience; and it is well illustrated by the case of acute intestinal obstruction in slow carcinoma of the colon which I recited to you a few minutes ago. I might illustrate the point by an endless variety of cases. Let me give you one instance, far simpler in character, but equally instructive from this point of view. A gentleman of 55, on a holiday tour in Ireland, is seized at night in his hotel with intense pain in the throat, distressing dysphagia, and considerable fever. The pharynx is found to be of a deep crimson hue, with scarcely a trace of swelling; the pulse and the whole bearing of the patient are expressive of extreme nervousness; and the aspect and history are significant. The man is gouty: the pharyngitis is an acute manifestation of goutiness, determined by holiday fare and a thorough soaking. A smart purgative, a large dose of bromide, simple local applications and low diet are followed by complete recovery in twenty-four hours.

This case, ordinary though it be, serves to impress another important consideration upon us. You observe that the disease beneath acute pharyngitis was *one of a specific kind*—gout. Once we had looked beyond the throat and the local inflammation we realised not only that there was a chronic disease to be reckoned with, but also that this was a great morbid process of the first order with a pathology of its own. This is a common experience in the cases now under review: that tuberculosis, gout, rheumatism, alcoholism, or other morbid process of equal rank, is the primary disease. A man of 50 who has suffered much in his eyes and joints for several years, is taken with acute epididymitis. There is no great difficulty connected with the treatment of his case; and yet it cannot be other than important for all concerned that his medical attendant should ask himself whether the attack may not be rheumatic like the patient's other troubles. In all these instances a little careful reflection suffices to increase to a remarkable extent our knowledge of what we have to deal with, and puts us in a position of obvious advantage in the matter of therapeutics, for, happily, the great specific processes of disease are precisely those for which we possess specific remedies of approved value.

Yet another therapeutic advantage which is gained by the correct appreciation of the significance of an acute illness is derived from the fact that it is often the means of revealing the existence of an insidious chronic disease *at an early stage*, and thus of enabling us to undertake, before they are too late, the measures proper for its arrest. Hæmatemesis in alcoholic hepatitis can be turned to good account in this way. It is often an early and always an alarming event, which the patient is not likely to forget, and it affords the practitioner an opportunity of speaking out which he ought never to miss. I will refer presently to the value in the same respect of early hæmoptysis and pleurisy in tuberculosis.

The immediate prognosis, like the immediate treatment, of acute illness, cannot be expected to be successful unless the true relations of the attack be observed and appreciated. Take acute albuminuria, for instance. The sudden appearance of albumin in the urine, with general anasarca and its other accompaniments, may quite often be traced to chronic nephritis with fresh renal congestion, instead of to acute nephritis. But the connection is readily missed unless trouble be taken to inquire into the patient's history, and to study the state of the circulation and the character of the urine with particular care. Obviously, the discovery that old-standing Bright's disease underlies the acute attack gives an entirely different aspect to the prognosis which we have to offer, from that which we should form were the disease acute parenchymatous nephritis. Even the recognition that an outburst of tuberculous infiltration in the lungs is not something entirely new but only something fresh, that is, the recrudescence of a chronic process that was quiescent and had been forgotten, is valuable as an element of prognosis.

As with the immediate, so with *the remote prognosis and the practical applications of it.* One of the chief advantages gained by correct determination of the significance of an acute illness lies in this, that it enables us to look ahead, and suggests the need and also the means of preventing a recurrence of it and its dangers. We appreciate the fact that the chronic disease which has thus been revealed to us does not pass with the attack, but remains behind, waiting as it were for another favourable opportunity to recur in an acute form. When a chronic disease has been allowed to drift on month after month, perhaps year after year, unrecognised, unattended to, or at least insufficiently treated, an acute manifestation of activity secures immediate attention to the case, and compels prophylaxis against the future. Indeed an acute attack in diseases of this character, once safely passed, often proves a blessing in disguise. Rules of living are laid down; and the patient, having been usefully alarmed by the hæmorrhage or other danger that he has survived, is careful to observe them.

I now come to by far the greatest of the many advantages which we derive from a correct and thorough appreciation of the relation of an acute illness to a chronic disease. This is the indication with which it furnishes us, and happily the useful means which it often suggests to us, not simply to prevent the recurrence of similar attacks, but *to strike at and arrest the primary disease in its course* whilst it is still of comparatively slight degree and in safe situations. You will bear with me whilst I dwell at some length on this aspect of our subject. It is best illustrated by the natural history of tuberculosis, which, because it is of all serious diseases the one most subject to spontaneous arrest, is also the most deceptive. I have already referred to two common events in the clinical course of tuberculosis which open our eyes for the first time, or ought to do so if properly regarded, to the existence of this grave disease in our patients, namely, hæmoptysis and acute pleurisy. I would now ask you: Do we employ these danger signals seriously as indications for immediate, continued, and radical treatment? If we did, should we be so ready as we commonly are to congratulate our patient and his friends and ourselves on his "recovery" from profuse pulmonary hæmorrhage or acute pleuritic effusion, and allow him to return to work in a few weeks? Surely if the disease with which he is affected be tuberculosis, which has manifested itself on this occasion in his bronchi or in his pleura, and may manifest itself presently in his lung, immediate and continuous provision must be made for treating it as it ought to be treated? Why should we wait months, or even years, for evidences of infiltration of the pulmonary tissue, when acute pleurisy, consequent on hæmoptysis, has occurred to warn us what to expect? I, for one, would not and do not wait. I treat a patient recovered from hæmoptysis only—that is, without discoverable signs of pnlmonary tuberculosis—or from what is still called "simple pleurisy with effusion," exactly as I would treat him did he come to me with crepitus and impaired resonance over the apex of one lung, and at least try to teach him practically what is meant by the hygiene of fresh air. This may appear to some of you an unusual and unnecessarily strong position to take up in giving advice to young persons who have been interrupted only for a few days or weeks in a career of early usefulness and greater promise which they have just commenced. Perhaps it is unusual, but increasing experience serves only to convince me that it is justifiable and correct. Hæmoptysis, pleurisy, fistula in ano, certain varieties of peritonitis, glandular enlargements—indeed, it may be nothing more than a continued fever with no discoverable location of the pathological process in the tissues—are all different phases of the tuberculous process which serve as danger signals if correctly appreciated. But they must be appreciated, as I have said, in their practical bearings. The conviction that they are tuberculous manifestations must be real—that is, it must be followed by action I have notes of cases of this character which I have sent abroad at once after convalescence from hæmoptysis or pleurisy, and the results have been eminently satisfactory.

And now in conclusion, and for one moment only, let me direct your attention to yet another consideration in connection with this subject, which relates to medicine not as an art, but as a science. A correct appreciation of the relation that I have attempted this evening, I fear somewhat laboriously, to establish between acute illness and chronic pathological changes is *a clinical key to the true pathology* of many of our most obscure and anxious cases. Acute illness, if looked at by itself, and by itself only, attracts our attention to chill, exhaustion, injury, and passing nervous influences as "causes" of disease, when they are nothing but the determining or exciting circumstances of the event or occurrence. Regarded as a manifestation of some pathological condition, acute illness compels us to look beyond mere phenomena to processes, and beyond processes to causes proper, such as the germs or poisons of tuberculosis, gout, alcoholism and syphilis. A man of 45 is found in urgent respiratory distress from acute laryngitis after a journey by rail. He is said to have acute laryngitis from "cold and fatigue." But it is not so—he is suffering from old-standing syphilis of the larynx with acute œdema which has been excited by these unfavourable influences. It might not have readily occurred to a practitioner called urgently to him to give him relief—if necessary by tracheotomy—that he had to deal with a case of specific disease, and that specific measures, in part at least, were the proper treatment for him.

By an intelligent consideration of disease, in this way and in other ways, as disease comes before him in his daily work, the practitioner learns to connect morbid processes and their acute manifestations with definite efficient causes, and to distinguish these from the extrinsic circumstances of life and the intrinsic conditions of the patient's body which simply promote the morbific actions of these. Contemplate for a moment how much has recently been done for medicine and for hygiene by the intelligent clinical study of neuritis and its relations to alcohol and arsenic! This is the pathology which the busiest practitioner, the humblest member of a medical society, may be in the most favourable position to advance; and the success which he attains may be as far-reaching for good as a brilliant discovery in bacteriology. Let us cultivate more carefully than we do at present the method of looking beneath the mere surface of our cases, and the superficial and present phenomena of disease, feeling assured that in doing so we are not only doing our best for our patient, but at the same time are taking an honourable part in the advancement of that great branch of natural knowledge to which we have devoted the best energies of our lives.

ON THE PREVENTION AND TREATMENT OF PUERPERAL SEPSIS.*

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First let me assure you how deeply I appreciate the compliment you have paid me in inviting me to deliver an address before your Society. When your honorary secretary wrote to me he suggested that I should choose a topic of practical interest to the general practitioner. I have, therefore, decided to discuss with you the prevention and treatment of puerperal sepsis—a subject of great practical importance both to the profession and the community.

You will observe I speak of *Puerperal Sepsis*, and not of puerperal fever. The latter is a misleading term, and should be discarded. Puerperal fever has no existence as a specific fever. It is not a definite nosological entity like small-pox or scarlatina or typhoid, running a definite course and always breeding true. By puerperal sepsis is meant a microbic infection, occurring during the puerperal state, affecting primarily the genital canal and secondarily the whole system. It in no sense differs from the septic infection to which ordinary surgical wounds are subject.

There are numerous species of micro-organisms which have been shown to be agents in causing puerperal sepsis, *e.g.*, streptococcus pyogenes; staphylococcus pyogenes; gonococcus; pneumococcus; bacillus coli communis; Loeffler's bacillus, etc. Of these the most important and virulent is said to be the first (the streptococcus pyogenes). In the majority of cases, however, more than one variety of germ is present—there is a mixed infection, the streptococci usually predominating.

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* An Address delivered before the Middlesborough Medical Society.

These microbes may gain access to the genital canal before labour sets in—as in the case of gonorrhœal infection—during labour or after it is completed. In the majority of cases the infection occurs during or immediately after labour. They may attack any part of the parturient canal from the vulva to the fundus uteri. Thence they may spread (*a*) by continuity of surface through the Fallopian tubes to the peritoneum; (*b*) by the lymphatics to the cellular tissue of the broad ligament and afterwards the blood stream; (*c*) by the veins to the blood directly. We may thus get one or more of a variety of lesions:—A septic perineal tear, a septic vaginitis, a putrid or septic endometritis, a salpingitis or pyosalpinx, cellulitis or abscess of the broad ligament, a localised or general peritonitis, a septic phlebitis of the pelvic veins, etc. Superadded to any of these lesions there may be septicæmia or pyæmia.

In the days before Lister, sepsis raged in all the Maternity hospitals, which became hot-beds of pestilence. In some of them the mortality of child birth was as high as 20 per cent. By the introduction of rigid asepsis and antisepsis, it has now been abolished from these institutions. All over the civilised world the result has been the same. Wherever strict antiseptic precautions have been adopted the reduction of puerperal mortality has been so startling as to convince all but those who are deaf to reason and blind to the logic of facts.

But an equal reduction of sepsis has not occurred in private practice. It is still far too common; and its frequency is greater than most medical men like to admit. In nine out of ten cases I am sure it can be absolutely prevented if only general practitioners will adopt the same precautions that have proved so efficacious in Maternity Hospitals. I grant you these preventive measures entail more time and trouble than the majority of men care to bestow on their confinements—especially when the fees they get are so miserably inadequate. But I would urge that it is well worth the trouble. Like many other evils, it is easier to prevent sepsis than to subdue it when once it has occurred. An extra half hour spent in sterilising hands and instruments before delivery may save many days and nights of anxious after-treatment.

First and foremost as a fertile source of infection I place the midwife. So long as the poor are attended by the present race of dirty, ignorant, meddlesome midwives, puerperal sepsis will be rife. I know of exceptions; but the great majority are filthy beyond description, and ignorant of the rudiments of obstetrics. Yet they presume to stick their dirty fingers into the vagina of the parturient women, to "help" her by pulling back the perineum, and even to put their hands into the womb to extract the after birth! Serenely they go from an infected case to a clean one, syringing both with the same dirty syringe, sponging both with the same foul sponge. Then, when the patient goes wrong, they call a doctor in to sign the death certificate.

What is the remedy for this disgraceful state of affairs? Surely some such measure as the "Midwives Bill." I know many of my medical friends object to this Bill as creating an inferior class of practitioners, licensed by the state, and competing with doctors for their midwifery practice. But they at present compete with medical men without let or hindrance—save in those rare cases when they are hauled up before the Coroner. If we had in every town or village a band of intelligent, educated monthly nurses or midwives, trained to be surgically clean, possessing a good general knowledge of obstetrics, taught, examined and controlled by the medical profession, I am sure that not only would thousands of poor women's lives be saved every year, but the medical man would benefit in health and pocket. The night bell would lose half its terrors. Being called only to those cases in which his skilled services are really necessary, he could claim a better fee than he now receives.

Amongst the better classes, at all events, the medical attendant usually has a voice in the selection of the monthly nurse. Let him choose one who, whether she be well versed in the science of obstetrics or not, is well grounded in the science of cleanliness, and is intelligently obedient to orders.

He should give her, before the labour sets in, explicit instructions as to the preparation of the room, of the bed, and of the patient herself. She should see to the boiling of the water, to the cleaning of the jugs, basins, douche can, etc. Above all things she must be forbidden on any account to examine the patient vaginally.

Let us now return to the medical attendant, and briefly enumerate what steps he should take in order to conduct his midwifery practice aseptically. First he should see that his midwifery bag and its contents are kept surgically clean. The bag should be capacious and have a removable washable lining. He should have at home a suitable steriliser—a fish kettle answers very well—in which he can boil his instruments in 1 per cent. soda solution after each case. The instruments when dry are to be pinned up in clean towels, and placed in the bag ready for use. What should the ordinary midwifery bag contain? (1) Midwifery forceps with all-metal handles; (2) glass female catheter; (3) perineum needle; (4) scissors; (5) enamelled iron douche can with 3 feet of tubing; (6) double channelled metal catheter for flushing out the uterus; (7) vulsellum forceps; (8) ovum forceps and flushing curette; (9) a bottle of sterilised iodoform gauze; (10) a clean linen apron; (11) ½ lb. packet of absorbent wool; (12) small bottle of sterilised silkworm gut sutures; (13) nail brush and loofah; (14) ergot or ergotin; (15) chloroform; (16) hypodermic syringe with tubes of tabloids; (17) perchloride of mercury tabloids; (18) lysol; (19) safety razor; (20) tube of antiseptic vaseline.

Precautions before Labour sets in.—It is the duty of the practitioner to assure himself that the sanitary condition of the house is satisfactory, that there is not leakage into it of sewer gas. The bedroom should be as far as possible from the water closet, bath room, or sink. The water supply (especially in country houses) should be enquired into, and water from doubtful wells avoided. It is dangerous for a woman to be confined in a house tainted with decomposing organic matter, such as manure, stale fish, or slaughter-house refuse. I well remember being called in to see the wife of a butcher who lived over his shop and slaughter-house. She was his third wife, and she and her two predecessors all died of puerperal sepsis.

There must be no other infections or dirty cases in the same house. In one case I traced the mischief to the husband who had an erysipelatous scalp wound, and had slept with his wife till the labour set in. In another septic case I found that the patient was being nursed by her mother, who was at the same time suffering from a fungating cancer of the breast.

About a year ago I was called to see a lady who had become profoundly septic after her confinement. All ordinary precautions had been taken—save that she had been delivered in a bedroom where a few weeks before one of her children had been nursed through an attack of scarlet fever. They had omitted to disinfect the room.

If the practitioner discovers that the patient, whilst still pregnant, is suffering from gonorrhœa, he should endeavour to cure the disease before the onset of labour.

Precautions at the onset of Labour.—If possible the patient should have a hot bath as soon as the pains begin. If this be not feasible the abdomen, vulva, and thighs should be well washed with soap and lysol water. An enema should be given and the rectum emptied. This is important, as it is not uncommon for fæcal matter to escape during the birth of the head, to soil the vulva, and thence be easily conveyed into the vagina.

The hair about the vulva should be removed by shaving. This may be done by the nurse. If this be done it is much more easy to keep the genitals clean after delivery. A sensible woman will never object to this proceeding if the reason for it be explained to her.

After this the patient should put on clean linen, and not be confined—as is often the case—in the oldest and filthiest petticoat she possesses.

Disinfection of the Hands.—To a very large extent the practitioner's freedom from puerperal sepsis depends on the care with which he sterilises his own hands. He should not undertake a confinement whilst he has a suppurating or septic sore on his hands, or if he has just operated on a foul or septic case, or performed a *post-mortem* examination. If he be attending a septic case, examining and douching her and so contaminating his hands, he must ask a medical friend to see to his other midwifery cases for him.

For the ordinary disinfecting of the hands I can strongly recommend lysol. This is an alkaline fluid, consisting largely of cresol. It mixes in all proportions with hot or cold water, and is usually used in the proportion of a drachm to the pint. It is not neutralised by soap (as are corrosive sublimate, carbolic acid, iodine, etc.) It is an excellent solvent for the fatty matter in the skin. It is only slightly poisonous and it is cheap (an ounce, costing about one penny, will make a gallon of antiseptic lotion as potent as 1 in 20 carbolic). It does not corrode or blacken steel instruments. If given as a vaginal douche it leaves the mucous membrane smooth and supple; in fact it acts as a lubricant. It does not benumb, roughen or harden the skin or cause it to desquamate. It is, therefore, I think, the best all-round antiseptic for obstetric work.

The practitioner must remove his rings and keep his nails closely trimmed and free from dirt. He should carry in his bag a clean nail brush and a square of loofah. With these he should vigorously scrub his hands and forearm up to the elbow for at least ten minutes in lysol water, taking special care to cleanse the spaces under and at the roots of the nails. The water should be as hot as can be borne, and changed twice. Once having got his hands clean he must take care throughout the labour to keep them so. If by chance he soils them, he must repeat the scrubbing process before again examining the patient. The nurse shall also go through the same cleansing process. During the progress of the labour a basin of lysol solution should be at hand for the attendant to rinse his hands in from time to time. As an extra precaution the hands after being cleansed with lysol, may be soaked for three minutes in corrosive 1 in 1,000.

Should the hands be badly contaminated (as by attending or operating on a septic case, or making a *post-mortem* examination) they should be sterilised by Kelly's method. They are first washed and scrubbed as clean as possible in ordinary hot water. They are then to be soaked in a hot saturated solution of permanganate of potash until stained a deep mahogany black. This takes about two minutes. They are then steeped in a hot saturated solution of oxalic acid, which decolourises the permanganate, and causes a brisk evolution of nascent oxygen. They are kept in this acid solution till every trace of brown stain has disappeared. This process takes about ten minutes. The acid is then washed off by rinsing the hands in plain warm boiled water. This method of cleansing the hands entails some trouble and is rather painful if they are at all chapped. I use it as a routine proceeding before performing a surgical operation, and I have satisfied myself that it renders the hands perfectly sterile even after being badly fouled.

Precautions during the Progress of Labour.—For the purpose of making an examination, the fingers may be lubricated with antiseptic vaseline, or simply dipped in lysol water. The dirty household pot of vaseline, or pat of lard on a saucer, which will be offered for the purpose, must be avoided.

As few vaginal examinations as possible should be made. Each one adds to the dangers of infection.

Avoid meddlesome midwifery. Most men apply the forceps too frequently and too early. They are anxious, if it be night time, to get back to bed, if it be day time to get on with other work. They too often apply the forceps before the os is fully dilated. The result is a deep tear of the cervix, opening up the cellular tissue of the pelvis to infection.

If it be necessary to apply the forceps, or to turn, or do craniotomy, the practitioner must carefully wash the vulva and douche out the vagina with lysol solution. He must carefully disinfect his own hands, and see that his instruments are all sterilised. The forceps may be lubricated by dipping them in lysol water. After the operation the uterus and vagina should be irrigated with the same solution.

Precautions during the Third Stage of Labour.—Many practitioners are in too great a hurry to expel the placenta. They want to "get the job over," and they prematurely squeeze out the placenta, with the result that often portions of the after birth or membranes are left behind—a common cause of sepsis. Unless the patient be flooding, no attempt to empty the uterus should be made for at least half an hour after delivery. The secundines should always be carefully examined, and if it be found that part has been retained, the accoucheur must carefully cleanse his hand, introduce it into the uterus, and remove the offending fragment.

In every case carefully examine the perineum and if it be at all lacerated stitch it at once. The nearer the tear to the rectum the greater the need for suturing. The best material is silk worm gut (sterilised by boiling). It is not usually necessary to give an anæsthetic. By suturing all tears at once, we help to shut off the raw surface from contamination—especially from fæcal contamination.

A full dose of ergot should be given after the birth of the placenta to promote contraction of the uterus, check bleeding and expel clots.

Precautions during the Puerperium.—As soon as the labour is over the vulva should be bathed with warm lysol water and a clean diaper or antiseptic pad applied. Southall's gauze swabs—largely used in Birmingham in place of surgical sponges—are soft, absorbent, easily sterilised by steaming or dry heat (in an ordinary oven) and are inexpensive. Each time the patient moves her bowels or passes water the pad should be changed, and the vulva should be bathed with warm lysol water.

It is unnecessary and unwise to douche during the puerperium unless some operative interference (such as turning or forceps) has been called for, or the hand has had to be introduced into the uterus to extract the placenta. If the patient has to be douched the attendant had better do it himself and not trust to the nurse. The patient should be placed on the left side with the hips hanging over the edge of the bed. The douche should be given with a douche can, care being taken that the water, the can, the tubing and the glass or metal nozzle are all boiled before each administration.

TREATMENT OF PUERPERAL SEPSIS.

So much for the prevention of puerperal sepsis. We now pass to the treatment of it when it has occurred. There are two main lines of treatment to be followed; *(a)* We must treat the local pelvic inflammation; *(b)* We must combat the general septicæmia.

Our first duty on being called to a case is to make a careful examination of the abdomen and pelvis, in order to ascertain, if possible, the point at which the poison entered, and the extent and severity of the local inflammation.

Some men are rather apt to shirk this examination because they are afraid of infecting their hands, and so carrying the poison to other cases. It is, however, absolutely necessary if we are to treat the case rationally and scientifically. Equally important is it for us to make a careful study of all the patient's symptoms in order to gauge the extent and character of the general blood poisoning.

Let me now glance in turn at the various lesions in the pelvis and abdomen generally found, and at the same time indicate the line of treatment which I have found most efficacious.

The Perineum.—If there be an infected tear of the perineum the raw surface will be found covered with a greyish film or slough or bathed in pus.

If the tear has been stitched, pus will be found oozing out between the edges of the wound and through the stitch holes.

There must be no delay in taking out all the stitches, and allowing the wound to gape. It should be well washed with lysol water, or 1 in 1000 corrosive sublimate, gently mopped dry and then cauterised by applying pure carbolic acid to the unhealthy surface. It should then be dusted with powdered iodoform, and a light dressing of iodoform gauze applied. This iodoform gauze should be changed every few hours until the surface cleans and begins to granulate.

If there be extensive sloughing it is an excellent plan to bathe the infected surface every few hours with peroxide of hydrogen until the sloughs separate.

Septic Vaginitis.—The vagina should be inspected by putting the patient in the left lateral position, and drawing back the perineum with Sims' duckbill speculum.

It may be found acutely inflamed, and bathed in pus, or covered with a greyish pellicle, resembling the false membrane of diphtheria.

In some cases there may be extensive sloughing of the mucous membrane (gangrenous vaginitis).

The vagina must be irrigated with lysol water or some other reliable antiseptic. It should then be mopped dry with pledgets of cotton wool, wrung out of the same antiseptic, and an iodoform pencil inserted. This must be repeated twice or thrice a day.

If there be patches of false membrane these should be swabbed with pure carbolic acid.

If there be a sloughing condition the canal should be washed with peroxide of hydrogen until the sloughs have separated.

Infected Tears of the Cervix.—The patient should be put in Sims' position, and the cervix exposed with a duckbill speculum. If there be an infected tear of the cervix it will be found that the raw tissue has a grey par-boiled or sloughy appearance, and is bathed in unhealthy pus.

It should be treated on the same lines as that advised for the perineal condition, viz: irrigation with lysol water, or corrosive, swabbing with carbolic acid and dressing with iodoform gauze.

Metritis and Endometritis.—This is undoubtedly the commonest lesion found in cases of puerperal sepsis, and there are probably few cases in which it is not the most important factor.

It is characterised by (1) marked tenderness of the uterus. (2) An offensive or purulent lochial discharge.

Unless, however, there be in addition pelvic cellulitis or peritonitis, the uterus remains mobile and no bulging mass can be felt behind or on either side of it.

The treatment consists in curetting, irrigating, and cauterising the uterus.

The patient should be placed in Sims' left lateral position with hips drawn over the edge of the bed. A mackintosh sheet should be placed under them and carried over the side of the bed in the form of a funnel into a pail or foot bath. The anterior lip of the cervix should be seized with vulsella and the womb drawn down to the vaginal outlet. The perineum should be drawn back with a Sims' speculum. The uterus should then be cautiously curetted with a sharp curette, care being taken to go systematically over the whole uterine interior. No force must be used, as otherwise perforation of the softened uterine wall may take place and the peritoneal cavity be opened—an accident which under these circumstances might be fatal.

The uterus should next be irrigated with lysol water, or weak perchloride by means of Budin's double channelled catheter in order to wash out the loose debris which the curette has detached. By this means fragments of retained placenta, membrane, or sloughing decidua are thoroughly removed.

The interior of the uterus should then be dried by means of wool on Playfair's probes, or the wooden probes which I introduced. It should then be swabbed out with some liquid caustic, such as pure carbolic acid, pure lysol, or pure formalin.

An iodoform gauze drain should next be carried up into the uterus with a sound and the vagina should lightly be packed with the same material. This gauze should be left in the uterus for forty-eight hours. After this, if the febrile symptoms have subsided, nothing more is required than a hot antiseptic vaginal douche three times a day.

If, however, the febrile symptoms continue, and especially if the discharge from the uterus continues to be offensive, it should be washed out every eight hours through a double channelled catheter with lysol water or weak perchloride. After each irrigation an iodoform pencil should be slipped into the uterus. The operation of curetting and disinfection of the uterus can often be performed without an anæsthetic.

Salpingitis, *Pyosalpinx and Pelvic Peritonitis*.—In some cases the infection spreads into the Fallopian tubes and through the tubes into the pelvic peritoneum, setting up a localised peritonitis.

On vaginal examination it will be found that the uterus has become fixed, and that behind, and on one or both sides of it, there is a fixed tender brawny tumour. If from the general symptoms, and from the presence of fluctuation, it is evident that pus has formed in this mass, it is our duty to open and drain it *per vaginam*. The patient must be anæsthetised and placed in the lithotomy position. The perineum should be drawn backwards by means of a speculum, and for this purpose Auvard's weighted speculum is invaluable. The vagina must be thoroughly disinfected with lysol, or corrosive sublimate.

The posterior lip of the cervix should be seized with vulsella and drawn forwards.

With scissors the posterior fornix should be incised for one or two inches, and the pouch of Douglas opened, when, if there be a collection of pus in the pouch, it is easily evacuated.

One or two fingers should be cautiously introduced into the pouch, and the Fallopian tubes examined. If they be found distended, they should be freely incised with scissors.

A strip of iodoform gauze should be lightly packed into the pouch of Douglas.

The vagina should also be packed with gauze, and the patient put back to bed.

Such an operation is all that is justifiable in acute puerperal pyosalpinx, and unless the systemic infection be profound it will in most cases save the patient.

In such cases, however, certain American and Continental surgeons advocate a much more severe operation, viz. :—vaginal or abdominal hysterectomy, with removal of both tubes.

I do not consider such an operation justifiable, as the patients are not in a condition to stand a severe operation.

Moreover, I think there must be a great danger in such cases of converting a localised infection into a general one, by pumping a large amount of toxic material either into the general peritoneal cavity, or into the circulation.

I have on several occasions opened the abdomen for acute puerperal pyosalpinx and have removed both tubes—with the result that the great majority of the patients died.

Had I been content in these cases with simply opening and draining the distended tubes through a vaginal incision (as is my present practice), I feel sure that the lives of many of those women would have been saved.

Pelvic Cellulitis and Abscess of the Broad Ligament.—In some cases it will be found that the cellular tissue of one or both broad ligaments becomes the seat of inflammation.

The infection usually starts from a tear in the cervix.

On examining the patient there is found on one or both sides of the uterus, low down in the pelvis and extending out to the lateral pelvic wall, a hard board-like mass of inflammatory material fixing the uterus as in plaster of Paris.

If there be no suppuration, if no fluctuation can be detected in the mass on either rectal or vaginal palpation, it should not be interfered with surgically.

Hot vaginal douches should be administered, and after each douche a tampon soaked in ichthyol (one part) and glycerine (nine parts) should be introduced into the upper part of the vagina. Should, however, it be evident from the presence of fluctuation, the occurrence of rigors, a spiky temperature and hectic sweats, that an abscess has formed in the broad ligament, it must be opened *per vaginam.*

The patient, having been anæsthetised, is placed in the lithotomy position.

The perineum is drawn backwards with Auvard's speculum and the vagina disinfected.

The vaginal mucous membrane is incised with scissors a little behind and to one or other side of the cervix.

A pair of long slender forceps is then thrust through this incision into the centre of the inflammatory mass and opened widely; when the pus will freely escape.

Through the opening made a rubber drainage tube should be inserted.

The vagina should then lightly be packed with gauze around the tube and the patient put back to bed.

Acute General Peritonitis.—The occurrence of acute general peritonitis is extremely ominous.

In typical cases there is hard drummy distention of the abdomen, a pinched face, a dry tongue, a quick pulse, and bilious or coffee ground vomiting.

The temperature may or may not be elevated; in some of the worst cases it is sub-normal.

The best treatment in such cases is to purge the patient. Give from three to five grains of calomel every six to twelve hours, till the bowels move freely.

Turpentine enemata should be administered every four hours to relieve the tympanitis.

Saline aperients such as sulphate of soda or sulphate of magnesia are of service in promoting purgation.

If there be signs of free fluid in the peritoneum the question of opening the abdomen has to be considered.

If on vaginal examination fluid can be felt bulging behind the uterus and distending the pouch of Douglas, the peritoneum should be opened through the posterior fornix and a rubber drain inserted.

I have in several cases of acute puerperal peritonitis opened the abdomen above the pubes and washed out and drained the peritoneum. The prognosis, however, is very bad, as in these cases there is not only a severe peritonitis but also a profound septicæmia, from which the great majority of the patients succumb.

TREATMENT OF GENERAL BLOOD POISONING.

Let me now describe the line of treatment to be followed in combating the general blood poisoning.

It is customary to describe three grades of blood poisoning. (*a*) Sapræmia in which only the toxines (or poisonous products of microbic action) are absorbed into the blood; (*b*) Septicæmia, in which not only the dead poisons, but also the living micro-organisms, invade the blood; and (*c*) pyæmia, in which emboli, loaded with micro-organisms, are from time to time swept into the blood stream and disseminated as septic infarcts throughout the body. In practice, however, it is very difficult to draw a sharp line between these varieties of blood poisoning, and, therefore, I shall use the term sepsis to cover all three classes.

(1) The first indication is to maintain the patient's strength. Liquid nourishment such as milk, egg-flip, and strong beef tea must be given by the mouth if she can retain them. If she be vomiting, nutritive enemata should be substituted. Alcohol must be administered freely, either by the mouth or by the rectum. As a rule there is nothing better than good Scotch whiskey. In some cases, however, champagne, or champagne and brandy in equal parts, is preferred. Heart failure should be combated by the administration of strychnine and strophanthus.

(2) Urgent symptoms must be treated as they arise.

Pyrexia is best treated, not by anti-pyretic drugs, but by the direct application of cold. Whenever the temperature runs up to over 104, it should be brought down by cold sponging or the application of an ice-water coil to the head. Quinine in 5 or 10 grain doses undoubtedly helps to reduce the temperature, and may safely be given..

The other anti-pyretics such as salicylate of soda, anti-pyrin, phenacetine, etc., had better be avoided, as they depress the heart and do not really influence the course of the disease.

Pain. As a rule in the cases of puerperal sepsis, pain is not an urgent symptom. Should there be marked abdominal pain, it may be relieved by hot turpentine stoups. It is well, however, not to give opium in any form. Opiates lock up the secretions, interfere with the elimination of the poison, and mask important symptoms.

Delirium is best treated by the application of the ice-water coil to the head, or if this be not available by frequent cold sponging.

(3) We must endeavour to neutralise or eliminate the poison in the patient's blood. For this purpose an antitoxin in the form of anti-streptococcic serum is largely used. This is prepared by injecting the horse or other susceptible animal with a pure culture of streptococcus pyogenes in repeated and increasing doses. After a course of these injections the blood becomes rich in anti-toxin. A quantity of blood is drawn from its vessels, and the serum from this blood is preserved in small glass vials each holding ten cubic centimetres. The serum should be injected into the subcutaneous tissue of the abdominal wall with a special syringe (which is so constructed that it can be easily rendered aseptic by boiling). In ordinary cases one dose of ten cubic centimetres is administered every twenty-four hours; in severe cases it is advisable to administer it every twelve hours. This anti-streptococcic serum is, however, not of value unless the streptococcus pyogenes be the predominating infecting agent. If, for example, the sepsis be due to staphylococci, or gonococci, or bacilli coli communis, or to bacilli diphtheriæ, or to pneumococci, it is probably useless to inject an anti-toxin prepared from streptococci. It is, however, probable that in most cases there is a mixed infection, and that as a rule the streptococcus is the predominant microbe. The use of the serum is not unattended with risks of its own. For example, in one case in which I used it, erysipelas appeared in the abdominal wall beginning at the seat of puncture. In another case, the patient, after each injection, became so collapsed that I dare not persevere with it. Occasionally the results are most brilliant; and undoubtedly many lives have been saved by it, which otherwise would have been lost.

In some cases the injection of normal saline solution in large quantities, either into the blood stream, or into the subcutaneous tissues, is undoubtedly of some service.

From a pint to a quart of normal saline solution (which contains roughly a drachm of chloride of sodium dissolved in a pint of water) is slowly injected into the tissues. It is quickly absorbed into the blood and eliminated through the skin, kidneys, and intestinal tract, carrying with it a certain proportion of the toxines circulating in the blood. This saline injection may be repeated every twelve or twenty-four hours.

Another method of aiding the elimination of the poison is by the administration of calomel, until free purgation results. This is particularly indicated when there are symptoms of peritonitis. Not only does the calomel act as an aperient, and remove noxious material from the intestines; but some proportion of the mercury is, I believe, absorbed into the blood (probably combined with albumin) and there it acts in some sense as a germicide.

A recently introduced method of combating sepsis is by the inunction of soluble metallic silver. This line of treatment has been brought out by Prof. Crede of Germany, and is not so well-known as it deserves. The ointment (known as unguentum Crede) may be obtained from Messrs. Burgoyne of London. Half a drachm of this ointment should be rubbed by the nurse into the thin skin at the inner side of the arm for about half-an-hour night and morning. The silver (which is in the form of a colloid albuminous compound) is readily absorbed through the skin, and is said to act as a powerful germicide in the blood.

I do not know whether it destroys the microbes in the blood, or whether it chemically neutralises the toxines circulating there, or whether in some way it fortifies the system against the attack of the enemy. But from personal experience of many cases in which I have used it, I can assure you that from the time I commenced the inunction of silver, the septic symptoms in the majority of cases began to subside.

A FAMILY OF BLEEDERS:

ADDITIONAL NOTES.

BY ERNEST A. SADLER, M.D., ASHBOURNE.

In the *Review* of July, 1898, I gave the history of a family of bleeders, resident in the town of Ashbourne, in whom the hæmorrhagic tendency had arisen *de novo* in the present generation; and I have thought that the following additional notes continuing the history up to the present time may be of interest.

The head of the family, Mrs. W., is still alive, and still bewailing the misery and suffering which she has apparently been the means of transmitting to her descendants. Of those of her sons who were living in 1898, John and William, and their children (to whom one addition was made a year ago) remain in good health; Edward, æt. 25, who is still unmarried, shows no hæmorrhagic tendency, and Frank, æt. 16, is still looked upon as the strongest member of the family. Harry, the youngest, now aged 14, has continued to have attacks of bleeding, chiefly from the nose and gums, and he still bruises easily from slight causes. He had hæmaturia nine months ago, but has not bled since. The left knee is much enlarged and deformed; it has never been quite normal since first affected ten or eleven years ago, and fills with blood whenever injured or over used. At the present time the swelling is due to enlargement of the ends of the bones entering into the formation of the joint; the knee is tucked and walking is difficult; he remains at home unable to work, and more or less of an invalid.

Two of the sons of Mrs. W. died from hæmorrhage prior to 1898.

Her daughters, five in number, are themselves still quite healthy, but the four who are married have each transmitted the diathesis to their male children.

I. In the family of Hannah, the eldest daughter, the following changes have occurred in the last four years:—

(1) The eldest boy Charles, now 10 years old, has developed the joint affection in the knee, which is like his uncle's, enlarged, deformed, and bent. He is often unable to get about, except with a crutch and stick.

(2) George, æt. 6½ years, has now hæmarthrosis of the right knee.

(3) Of the twin boys, who in 1898 were only four months old and had not shown any hæmorrhagic tendencies, one (Herbert) died at the age of two of broncho-pneumonia, without ever bleeding, though he had shown the tendency to bruise; and the other (John) has not bled, nor as yet shown any disposition to bruise.

(4) Another child was born two years ago. It is a boy, but has not yet exhibited the signs of the diathesis.

II. The second daughter (Fanny) has given birth to two children since 1898, both boys.

(1) The elder (Sidney) has the joint affection in the knee, but has not bled externally.

(2) The younger (Henry) died seven weeks ago at Burton-on-Trent, at the age of 18 months, of bleeding from the frenum of the upper lip.

(3) Walter, the only child who was living in 1898, is still alive, æt. 5½, but has been in Burton Infirmary four times for swelling of the knee, and on three other occasions for excessive bleeding from the frenum of the upper lip.

III. The third daughter (Harriett), who had no children in 1898, although she had then been married four years, has since had two, both boys.

(1) Willie, who died within 24 hours of birth, in convulsions.

(2) George, æt. 3, who has had three severe attacks of bleeding from the frenum of the upper lip, but as yet no joint affection. He is at the present time of a waxy paleness, with hardly any distinguishable colour in the lips—a condition of profound anæmia which rapidly supervenes in all these children after an

attack of bleeding, and which is, as a rule, just as rapidly recovered from when the bleeding ceases.

IV. The fourth daughter has married since 1898, and has also had two children, both boys.

(1) Arthur died of broncho-pneumonia at the age of six weeks.

(2) George, æt. 2, who has had three attacks of bleeding; the first twelve months ago from the frenum of the upper lip, the second a few weeks ago from a slight scratch on the wrist, and the third a few days later from a bitten tongue. This attack led to a fatal result from pneumonia, probably of a septic nature, due to the decomposition of the clot which formed on the tongue, and of the blood which trickled down into the air-passages.

V. Julia is still single, but in total disregard of the protestations of her mother, and of the experience of her sisters, is to be married at Christmas.

An analysis of the cases recorded in this and the previous paper presents some interesting points. There were in the second generation eight boys and five girls. Three of the boys have been bleeders, two of whom have died from hæmorrhage at the age of 3 and 7 years respectively, without showing the joint affection, while the third is, at the age of 14, almost a cripple from disorganisation of the knee-joint. Those who suffered were the 1st, 11th, and 13th members of the family of thirteen. It is curious to note that the 12th has never bled, and is considered the most healthy of all the children, though the brothers born immediately before and after him had the tendency well marked.

The daughters are the 4th, 5th, 6th, 8th and 10th members of the family. They have had between them fifteen children of whom two were girls who died in early infancy. Of the thirteen boys, nine have shown the hæmophylic tendency. Two of these have so far had the joint affection only; four have had external hæmorrhage without hæmarthrosis, three of them dying from it just under the age of two years, the fourth being as yet barely three years old, and so at an age when the joint affection may yet develop. Three of the nine have had both hæmorrhage and hæmarthrosis.

The four boys who have not shown any hæmophylic symptoms are :—

(1) One who died from pneumonia at the age of six weeks.

(2) A child who died on the first day of life.

(3) One of Hannah's twins who is over four years old.

(4) Hannah's youngest boy, aged nearly two.

The only girls born to Mrs. W.'s four daughters were :—

(1) The third child of Hannah who died of pneumonia at the age of three.

(2) The third child of Fanny who died on the first day of life.

The most interesting conclusions to be drawn from the history of this family, as at present known, are :—

(1) Its conformity to the well-known characteristic of the disease to miss the girls, and to show itself in their male children, while failing to affect any of the children of those sons who survive long enough to marry and have children of their own. Thus two married sons of Mrs. W. have ten children in whom none of the symptoms of the diathesis has appeared. It will be interesting to note whether the daughters of these sons will in course of time transmit the hæmorrhagic tendency to their offspring.

(2) The preponderance of males in the children of the daughters is most marked. Of fifteen children, thirteen were boys, and none but boys survived infancy. The proportion of girls to boys in the children of the sons is greater, viz., three to seven, though still below the average.

(3) The most vulnerable point, and that from which bleeding most frequently occurs is apparently the frenum of the upper lip.

(4) The commonest site of the hæmarthrosis has been in the later cases the knee ; in one instance the elbow was affected, in one the ankle.

(5) The causes of death are worthy of note. Eight of the

fifteen children born to the daughters are dead, two in the first day of life, two of bleeding, and four of broncho-pneumonia.

As regards treatment the only additional point worth noting is the good result I have obtained from hazeline (sweetened with a little glycerine) applied locally with a brush to parts such as the tongue, lips and gums, where pressure cannot be applied or tolerated for any length of time.

MEDICAL ABSTRACTS.

PATHOLOGY.

BY JAMES MILLER, M.B., M.R.C.P. ED.

Ueber eine neue Art von Diphtherieserum. Wassermann. (*Deutsche Medicinische Wochenschrift.* Oct. 30th, 1902.)

Active immunity may be produced in an animal either towards the toxin produced by an organism or towards the organism itself, according as the cell product or the bacterial cell itself be introduced into the animal. Two forms of immune-sera are thus distinguished: 1. Antitoxic; 2. Antimicrobic. The former neutralises the toxin, the latter destroys the organism. Both may be employed in producing passive immunity in another animal, both are consequently important agents in serum therapeutics.

The type of the antitoxic serum is the one which was first discovered—the antidiphtheritic serum. This serum acts by neutralising the toxin much as an acid neutralises an alkali; it has no action on the organism itself.

Antibacterial sera have been prepared for typhoid and cholera organisms, for the bacillus of bubonic plague, the bacillus coli communis, the pneumococcus, streptococcus (Marmorek), and many others. The explanation of the action of these antimicrobic sera is, however, not nearly so simple as in the case of the antitoxic. There are at least two distinct actions to be considered. There is first the lysogenic action, first described by Pfeiffer. This depends upon the fact that the serum of an animal immunised against a certain organism has the power of actually dissolving the body of the organism. This action has been more fully studied and its scope extended to include many varieties of cells by Ehrlich. Antibacterial sera are now merely a small department of the great group of cytolysins. Secondly, there is the phenomenon of agglutination, sometimes called the Gruber-Durham phenomenon, which depends upon the fact that an antimicrobic serum contains a body capable of causing the bodies of the organisms to adhere together, and ultimately of bringing about their precipitation. Here, however, some authors would distinguish two bodies—an agglutinin and a precipitin.

The antitoxin pure and simple can produce none of these phenomena. Now what the author of the above paper has endeavoured to do is to produce an antidiphtheritic serum which is not simply antitoxic but which is antimicrobic as well. The importance of this is obvious. We have at present in antidiphtheritic serum an excellent agent for neutralising the toxin produced by the organism, but whether it acts in any way upon the bacillus itself is more than doubtful. What is a fact is that the organism may persist in the air passages in a virulent condition for weeks after an attack of the disease, the patient remaining a source of danger to those with whom he comes in contact. The addition of an antimicrobic action to antidiphtheritic serum would obviously be a step in advance. The author carried out his experiments as follows. At first he merely injected the bodies of diphtheria into small animals such as rabbits and guinea-pigs. He found, however, that they almost all died. He, therefore, had recourse to the method used by Koch in his investigations with the tubercle bacillus. The bodies of the diphtheria bacilli were dried for twenty-four hours at 60° C., and thus killed; they were then further dried in an exsiccator and pulverised in an agate mortar. This bacterial powder is then extracted according to Aronson's method with 1 per cent. of ethylendiamin solution. To 1 gramme of this diphtheria bacillus powder 20 c.c.m. of ethylendiamin solution is added, the mixture is then shaken for several hours in a special apparatus, and after twenty-four hours standing it is filtered and centrifugalised. The clear fluid thus obtained is of a yellow colour, it contains a large amount of the substances extracted from the bodies of the bacilli and it gives a copious precipitate on the addition of acetic acid. If 1–2 c.c.m. of this solution was injected into rabbits or guinea-pigs they died of acute diphtheritic poisoning due to a certain amount of diphtheria toxin still remaining in the bodies of the organisms and extracted by the ethylendiamin. It was, therefore, necessary first to neutralise this toxin in order to allow of the animals living long enough. This was easily done by adding a sufficient amount of diphtheria antitoxin.

With such a neutralised fluid the author has treated a number of rabbits. The animals received repeated injections of 2–4 c.c.m. As a result they invariably showed a reduction in body weight, so that the substance contained in the bodies of diphtheria bacilli is not inactive towards animals.

The serum thus obtained from these animals was then tested as regards its effect upon an extract of the bodies of the bacilli. It was added to the clear extract, and very soon a cloudiness appeared, which sank to the bottom as a flocculent precipitate. No such reaction is given by antitoxic serum or by normal rabbit serum.

The author concludes by saying that not only has this serum possibilities before it from the point of view of serum therapeutics, but that it may also be used as a means of distinguishing between the true and pseudo diphtheria bacilli.

Eine Endemie von Paratyphus. Feyfer und Kayser.—(*Münchener Medicinische Wochenschrift.* Oct. 14th, 1902.)

Cases of what is now termed paratyphoid have been described by Schottmüller, Brion, and Kayser in Germany, and by

Johnston, Hewlett, and Longcope in America. We must, therefore, take it as proven that there occur cases of typhoid-like fever due to an organism nearly related to, but not identical with, the bacillus typhosus, cases which fail to give the Widal reaction, but which give a reaction of a similar nature with a bacillus allied on the one side to the B. coli, on the other to the B. typhosus. Two varieties of this B. paratyphosus, as it is called, have been described by Schottmüller, designated by him, type A and type B. The blood of a patient suffering from the disease produced by type A does not agglutinate the bacilli of type B, and *vice versa.*

The series of cases described by the authors of this paper, although not investigated with the fulness that other cases occurring in hospitals have been, are yet of sufficient interest to warrant attention. The cases occurred in a country district in Holland, and were further investigated at Strassburg. The history and symptoms of fourteen of these which were more carefully studied are given in detail.

The more characteristic features of the series are as follows :—A short prodromal stage (1–4 days) with a slight rise of temperature, loss of appetite, head, back, and joint pain. The course of the disease was favourable, and the convalescence short. The temperature curve resembles that of typhoid fever. The pulse frequency corresponds to the height of the temperature. Symptoms connected with the intestinal canal are—coated tongue, pain in the abdomen, gurgling in the ileo-cæcal region, and usually marked diarrhœa. There was slight enlargement of the spleen. The urine was acid, there was no albumen, the diazoreaction was positive, and there was marked evidence of the presence of indigo. Hæmorrhage from the bowel was rare and slight. In about half the cases roseola were present. In all the cases which were tested (9) the blood serum of the patient agglutinated the B. paratyphoid (type B.) In one of the cases the B. typhosus was agglutinated as well, pointing to mixed infection.

In its cultural relations the organism resembles the typhoid bacillus in some respects, the bacillus coli in others. The two types differ, however, from each other.

Bruns and Kayser have investigated the agglutination phenomena of the organism experimentally, and have come to the conclusion that types A and B represent definite entities just as bacillus typhosus does. They showed from experiments on rabbits that a serum which agglutinates B. paratyphosus, type A, in a proportion of one part of serum to 2,500 parts of a 12-hour bouillon culture is entirely inactive towards B. paratyphi, type B, and B. typhosus in a relation of 1 to 50. Investigations with the serum of two rabbits which were immunised against B. paratyphosus, type B gave other results. Typhoid bacilli were in this case agglutinated in a dilution of 1 in 100 microscopically as well as the B. paratyphosus, type B; a less dilution, however, proved inactive towards type A.

Bruns and Kayser conclude the following from their investigations. For clinical diagnosis a quickly positive reaction macroscopically, with a dilution of one part of serum to 75 parts of a 12-hour bouillon culture of one or other type, is proof of the existence of paratyphoid. Very powerfully agglutinating serum is capable of agglutinating both typhoid and paratyphoid bacilli, but this group-agglutination will only occur in dilutions up to 1 in 20. If agglutination of both organisms occurs with greater dilutions, there is probably mixed infection.

In the group of cases described by the authors the highest dilution at which agglutination occurred with B. paratyphosus, type B, varied between 1 : 120 and 1 : 5,700. None of the sera had any influence on B. paratyphosus, type A. The less active sera did not agglutinate B. typhosus in a dilution of 1 to 30, but the two strongest did agglutinate this organism, one in a dilution of 1 in 60, macroscopically and at once, of 1 to 120 microscopically; the other did not agglutinate at quite so high a dilution. On these grounds, and on the grounds of the experiments on rabbits, one must admit a group-agglutination.

In one case the serum agglutinated the typhoid bacillus in a dilution of 1 in 720 microscopically, also B. paratyphosus, type B, in a dilution of 1 in 1,440. A diagnosis of mixed infection was therefore given.

An unfortunate point about this group of cases is that the baccilli were not isolated from the blood in any case. This is explained by the fact that only a very small quantity of blood was taken for examination. In the series of cases described by Johnson in the *American Journal of the Medical Sciences*, August, 1902, the organism was only isolated in two cases, and that was after withdrawing 12 c.c. of blood and distributing that among five Erlenmeyer flasks, each containing 150 c.c. of broth, and only one flask showed any growth.

Paratyphoid is by no means rare. Over forty cases have up to now been reported in Germany and America. Schottmüller investigated a series of 118 cases of supposed typhoid fever and found that 7 were paratyphoid. Kurth found 5 among 62. This gives 12 out of 180 or 6·6 per cent. One must, therefore, be on the watch for cases of apparent typhoid which fail to give the Widal reaction and investigate them more thoroughly from a bacteriological standpoint.

Only one case of undoubted paratyphoid has proved fatal and been examined *post mortem.* This case is fully described by Longcope in the *American Journal of the Medical Sciences*, August, 1902. Although a typhoid-like organism was cultivated from the blood during life and from the blood, lung, liver and spleen after death no intestinal lesion of any kind was discovered.

The Causative Agent in Sleeping Sickness. Bettencourt, Lisbon, 1901, also Sarmento and Franca. *Centralblatt für Bakteriologie*, Referate, Bd. xxxii., No. 1.

The paper of the first-mentioned author gives the result of the work of a commission sent out to Central Africa by the Portuguese Government to investigate this obscure condition. The material consisted of 28 cases. Of these 21 were male and 6 female; 15 were children of from 7 to 11 years of age. Of these 12 died and *post-mortems* were performed in all cases. Another case was examined *post-mortem* which could not be examined during life. Only in a few cases was it possible to decide the duration of the disease; probably this is usually 3–4 months. The main symptoms are those associated with the lymphatic, nervous and circulatory systems as well as with the heat-regulating mechanism. *Post-mortem*, the cerebro-spinal fluid was found invariably increased in amount. The fluid was never transparent but could not be called purulent. The arachnoid was slightly but uniformly thickened and in parts dim and opalescent. The pia was congested although not uniformly. The muscle substance of the heart was yellow in colour. Liver, kidneys and spleen showed nothing special.

Bacteriological investigation showed that a diplococcus like that described by Neisser or Weichselbaum was constantly present which tended to form chains. This organism was usually found free in the exudate, in the interior of the protoplasm of the leucocytes, or in the endothelial cells of the serous spaces. The size of the organism is 1·6–2 μ. It stains with all the basic aniline dyes, its reaction to Gram is uncertain and not always the same.

It grows badly on the usual culture media. Better results were obtained with Martin's or Kiefer's fluid. The organism is pathogenic for rabbits and mice but not for guinea-pigs or doves.

The author concludes that the condition is a meningoencephalitis which is caused by a micro-organism found in the meninges, the lymphatic glands, and in one case in the circulating blood.

Sarmento and Franca performed a *post-mortem* on a case of sleeping sickness in Lisbon, twelve hours after death. The results bore out those of the commission previously described, *i.e.*, that the condition is a chronic meningoencephalitis caused by an organism. Numerous diplococci were found in the pia-arachnoid lying between the leucocytes. The brain cortex showed perivascular infiltration similar to that found in a case of hydrophobia, the only difference being that in this case the exuded cells were chiefly plasma cells and Ramon-Cajal cyanophil cells; between these cells were diplococci, but these latter were much fewer than in the meninges. The authors lay great stress on the finding of the plasma cells not only around the vessels but in the brain tissue itself, and see in this a characteristic feature of the disease.

Hitherto the only attempt to assign a cause for this curious disease has been that of Manson, who has suggested that it may in some way be associated with the presence of filaria perstans in the vessels of the brain. Manson has found this parasite in several cases of sleeping sickness.

REPORTS OF SOCIETIES.

British Medical Association.

Birmingham and Midland Counties Branch.

Session 1902-1903.

The Second Ordinary Meeting of the Session was held in the Medical Institute, Birmingham, on November 13th, 1902, Dr. H. Malet, President, being in the chair.

Fifty-three members were present.

Confirmation of Minutes.—The Minutes of the previous meeting were read, confirmed, and signed.

Intussusception.—Mr. D'Arcy Ellis showed a child upon whom he had operated on July 4th, when it was eleven weeks old, within four hours of the onset of evident symptoms of intussusception. The swelling was to the left of the umbilicus, and was not attended by the discharge of blood or mucus. A median incision was made, the involved bowel lifted out, and the invagination reduced by pressure and traction, the appendix appearing with the last portion. There was very little shock, and the bowels acted seven hours after operation. Nutrient enemata were given for three days. Dressings were removed on the fourteenth day, when the wound was found soundly healed. The child had had no previous illness, and had been fed at the breast exclusively. Recovery was complete.

Suprapubic Prostatectomy for Enlarged Prostate.—Mr. George Heaton showed a man whose prostate he had removed by Freyer's method some four months ago. He also showed the prostate. The man was a miner, æt. 54, who had had symptoms of prostatic obstruction for two years, with occasional attacks of complete retention. The residual urine whilst the man was kept under observation varied from 24 ounces to 36 ounces, and was never less than a pint. Repeated catheterism had produced cystitis. Medical measures having been given a trial, a suprapubic cystotomy was performed, and the prostate enucleated with the finger nail as described by Mr. Freyer. This was easily done, and there was but little bleeding. The man's convalescence was complicated by an attack of bronchitis and pleurisy, but the operation wound gave no trouble. After his bladder wound was healed he had never again required the use of the catheter. He could now hold his water for five or six hours, had no difficulty in passing it, and there was no residual urine.

Periosteal Sarcoma of Clavicle.—Mr. Barling showed this specimen which he had removed from a girl, æt. 10. The growth, which was a round-cell sarcoma, enveloped the whole of the clavicle and left only the cartilage of the sternal end undestroyed. It appeared to have followed an injury nine months before operation. At the operation the thoracic duct was injured just before it entered the sub-clavian vein and the opening was closed by lateral ligature, but in a few days chyle escaped from the wound, and for several days in very large quantities, but at the end of a fortnight this entirely ceased. The patient made a good recovery from the operation and gained flesh rapidly, but in a little more than six months there was recurrence *in loco.*

Myxo-sarcoma of Gluteal Region.—Mr. Barling also showed a very large cystic growth which he had removed from a gentleman, æt. 42, who had been the subject of sciatic pain for nearly two years, during which time he had been treated for sciatica. When first seen by Mr. Barling he had a swelling which occupied almost the whole of the gluteal area; it was elastic and in some parts fluctuating, and it appeared as though there was slight movement over the innominate bone; puncture with an exploring trocar yielded only blood and a fragment of tissue, which might have been derived from a spindle cell sarcoma. The patient had the advantage of Mr. Butlin's opinion, and the possibility of gluteal aneurism without pulsation or of an encapsuled and removable growth, led to an exploratory incision which was made as for ligature of the gluteal artery where it is emitted from the great sciatic notch; but this vessel was found intact, and a well encapsuled growth being discovered, it was determined to proceed to excision. The first incision was prolonged to 12 inches, and another incision 14 inches long was made across this at right angles dividing the whole length of the gluteus maximus transversely to its fibres; later the whole of the gluteus medius and the pyriformis were also divided. The growth appeared to have originated in the fascia over the gluteus minimus; the sciatic nerve entered its lower end and was spread over the lower part and the inner side of the tumour, with the capsule of which it was closely blended, and the nerve was also stretched out so that at the widest part it measured nearly three inches; with much difficulty the nerve was separated from the growth. The loss of blood was very considerable and a very large number of vessels required ligature; shock after the operation was severe and required saline transfusion, but a good recovery followed, and healing took place by first intention. At the end of five weeks the patient was able to walk about freely, and all the sensory and motor functions of the nerves were retained.

Myoma of Ovarian Ligament.—Mr. John W. Taylor showed a myoma of the left ovarian ligament, removed the same morning. The specimen contained the left ovary and tube attached to the myoma (which was visibly growing from the "ligament"), and ovary, and tube, and uterus could each be definitely excluded as possible source of origin. The patient was a single woman, aged 50. The tumour was locked in the pelvis, and pressing upon the rectum, and it was for symptoms of pressure and pain that the operation was undertaken.

Vesical Calculi.—Dr. E. Deanesly showed two smooth oval calculi, removed by suprapubic cystotomy from a man aged 61. They lay in a sac at the base of the bladder, opening into the latter by a very narrow opening. The existence of this condition not having been suspected, lithotrity was first attempted, and one half of one calculus was seized, crushed, and evacuated. Renewed sounding, combined with digital examination *per rectum*, then revealed an encysted stone, and the operation was completed by suprapubic section. The unbroken stone measured 1in. by ⅞in., and the broken one slightly less. A collar-like projection of the prostate was freely divided posteriorly with scissors. The patient was still in hospital, and making good progress towards recovery. An interesting feature in the clinical history was that suprapubic lithotomy and partial removal of an internal projection of the prostate had been performed only twelve months previously by another surgeon. After this operation, the patient, who had been completely dependent on the catheter for five years, regained voluntary micturition, but did not lose his pain. This fact and the size of the calculi render it probable that they actually existed at the time of the previous cystotomy, and escaped discovery owing to the narrow opening of the sac in which they lay.

New Inhaler.—Mr. F. Victor Milward showed an inhaler which he had devised for the administration of ether and chloroform in mixture. He had long recognised that the method of giving the mixture E_2C_1, in a Clover's inhaler without a bag, was a very valuable one. The apparatus presented was an improvement on that principle. By it, ether and chloroform could be given either separately or together in any proportion, and that proportion could be changed, as required, at any time during the administration. The inhaler was, in fact, a double Clover's apparatus. It had two chambers, the top one for ether, the bottom one for chloroform. Indicators, opening and shutting the two chambers, were at the top and bottom of the main cylinder, and each could be used independently. The central airway was double the calibre of the ordinary Clover's inhaler, and this obviated any obstruction to respiration. It was necessary to remove the bag when giving chloroform. He had successfully used this method many times, especially in abdominal operations, and thought it had material advantages. The makers were Messrs. Down Bros., London.

Paper.—Mr. J. Hall Edwards read a paper on "The Diagnosis of obscure Fractures by means of the X-rays."

The paper was discussed by Mr. Jordan Lloyd, Dr. Deanesly, Mr. Bennett May, Dr. T. E. Underhill, Dr. Thursfield, and Mr. Morrison; and Mr. Hall Edwards replied.

Resolution.—On the motion of Dr. Thomas Wilson, it was resolved "That Dr. Deanesly's Paper be postponed to the next Ordinary Meeting."

MIDLAND MEDICAL SOCIETY.

The second Ordinary Meeting was held at the Medical Institute, Birmingham, on November 5th. Dr. Langley Browne in the Chair.

Mr. Gamgee showed a case of Epithelioma of the lip, which had been treated by X-rays for two months. There was marked decrease in the size of the growth and the appearance of the tissues was much more healthy.

Mr. Hall Edwards made remarks on the application of X-rays to tumour growths, and considered that in many instances the method was very beneficial.

Mr. Leedham-Green said it would be instructive to see the patient on a future occasion.

Mr. Lucas referred to a case of Rodent Ulcer where X-ray treatment had done good.

Mr. J. F. Jordan showed a specimen of Cancer of the Cervix complicated by pregnancy. The cervix was extirpated *per vaginam*, and the uterus and fœtus removed by abdominal section. The patient made a satisfactory recovery.

Mr. Christopher Martin considered that Mr. Jordan took the right course in removing the cervix and uterus at once, for had he postponed operating till the fœtus was viable, the risks of recurrence would have been much greater.

Dr. Emanuel showed a brain in which there was a large cyst situated in the left centrum ovale. The patient who for some time had complained of headache and vomiting was brought into the hospital in a comatose condition. There was extensive hæmorrhage from the wall of the cyst.

A portion of the cyst wall had been examined microscopically, but nothing suggestive of new growth was seen, the changes being rather of an inflammatory character.

Mr. Leedham-Green then read a paper on the Treatment of Chronic Urethritis. This was discussed by the President, Messrs. Newton, Oakes and Milward. Mr. Leedham-Green replied.

REVIEWS.

THE WORK OF THE DIGESTIVE GLANDS.*

We heartily welcome the appearance of an English translation of Professor Pawlow's Lectures on the physiology of digestion. It is hardly too much to say that no more important contribution to practical medicine through the science of physiology has been made in recent times, and Professor Thompson has done a real service to English physicians in placing within their reach the record of these researches.

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* The Work of the Digestive Glands. Lectures by Professor J. P. Pawlow, Director of the Physiological Department of the Institute for Experimental Medicine, St. Petersburg. Translated into English by W. H. Thompson, M.D., M.Ch., F.R.C.S. (Eng.), King's Professor of the Institutes of Medicine, Trinity College, Dublin. London: Charles Griffin and Co., Limited. 1902.

The lectures are so full of matter that but a very imperfect idea of their contents can be given in a single review. The prominent outcome, however, may be said to be the demonstration of a most remarkable inter-dependence of the functions of the various parts of the alimentary canal upon one another, and of the possession by these parts of a discriminating power over their work to which it is scarcely an exaggeration to apply the term intelligent. The first lecture is devoted to a description of the methods of experiment, their gradual evolution, and the elimination of the sources of error or of confusion which have marred much of the older work on the physiology of digestion. The operative methods adopted are highly ingenious, and Professor Pawlow draws prominent attention to the fact that he has been enabled to carry out certain measures without detriment to the health of the animals experimented upon, only through the provision at the St. Petersburg Institute of efficient apparatus and accommodation for the performance of aseptic operations and after-treatment. The chief experimental results have been obtained by the combination of two operations in the same animal: first, the division of the œsophagus, and fixation of its upper part in the wound in the neck; and secondly, the isolation of a portion of the stomach and the formation of a fistula, without interfering with the nervous and vascular connections of the whole organ. By these provisions it has become possible to study both the effect of feeding uncomplicated by the entrance of food into the stomach, and also the results of the presence of various foods in its cavity uncomplicated by the psychic effects of the meal. At the same time in each case a gastric juice of perfect purity has been obtained for examination. The only possible objection that can be taken to these experiments lies in the assumption that the juice secreted by the isolated portion of the stomach is a true indication of that which is simultaneously poured into the actual organ after the reception of food. But Professor Pawlow attacks this objection in a later lecture and gives, as it seems to us, very satisfactory reasons for thinking that it is unfounded. Similar methods have also been adopted for the study of the pancreatic secretion, the bile, and lastly the intestinal juice.

In the succeeding lectures the results of innumerable and most laborious observations are minutely recorded. The second lecture deals with the secretion of the gastric and pancreatic juice after a meal, and shows that these secretions follow a very certain course of their own, both as regards the amount poured out and the digestive activity. The dependence of these factors upon the nature of the ingested food and the occurrence of remarkable variations according to differences in the quality of the food, are then demonstrated. The third and fourth lectures are concerned with experiments on the nervous apparatus of secretion, and the means by which the impulses calling forth the necessary variations in the secretion are transmitted. This chapter contains a series of most original experiments, and controverts the views hitherto largely accepted by physiologists. Especial stress is laid upon the all-important influence of appetite upon secretion. In the fifth lecture the latter point is still further demonstrated, and ingenious experiments are recorded for obtaining and analysing the so-called "appetite juice" of the dogs used for observation. A complete refutation is further given of the usually accepted view that mechanical stimulation of the gastric mucous membrane is capable of giving rise to secretion. The sixth lecture concerns itself with a further inquiry into the specific effect of various foods and combinations of foods on gastric secretion, and arrives at the very interesting result that a material, such as starch, "which of itself is unable to excite a gastric secretion, can alter the work of the glands in a decided and special manner when combined with the actual constituents of flesh." It also establishes the existence of an inhibitory power of fats on the gastric secretion. Lecture seven investigates the physiology of the pancreatic secretion, and the eighth lecture lays stress upon some of the lessons to be learnt from the whole investigation as regards the practice of medicine. In the last chapter, which is the report of a lecture delivered five years later than those which have preceded it, Professor Pawlow records the results of his observations on the physiology of the bile and the succus entericus, which show that both these secretions are mainly of use in furthering, and often in actually calling forth, the active properties of the pancreatic juice.

Our review would be imperfect were we to conclude without calling attention to the excellence of Professor Thompson's translation. Besides being written with admirable clearness and in irreproachable English, there is no suggestion in its pages of the origin of the book in a foreign language. We have hardly yet come across a translation of which this could so honestly be said.

A MANUAL OF MEDICINE.*

The fourth volume of Dr. Allchin's Manual of Medicine describes the diseases of the respiratory and circulatory systems. It is a very satisfactory piece of work and affords but little opportunity for criticism.

Each of the two divisions of the volume is preceded by an excellent account of the anatomy and physiology of their respective organs from the pen of Dr. Leonard Hill, who is recognised as a leading authority on the physiology of the processes of respiration and circulation. Both introductions are good, but that which precedes the description of the diseases of the heart is especially so. The disorders of the upper respiratory tract are undertaken by Dr. Lewis Smith; those of the lower tract by Dr. Hector Mackenzie. A curious and novel arrangement has been adopted in the latter section, by which the morbid anatomy of the whole of the respiratory diseases is dealt with in a single chapter, preliminary to the consideration of the diseases themselves. Although no serious objection can be made to this arrangement, we are inclined to prefer the usual plan according to which the anatomy of each disease is taken along with the description of the disease itself. Perhaps, however, the grouping together of the morbid anatomy of the whole tract may lead to a better grasp of the relations borne by the various diseases to one another. There is also a general consideration of the symptomatology of the respiratory diseases, and this is excellently written and certainly of value. The several diseases in both of these sections are well and clearly described. . The chapter on diseases of the pleura is from the pen of Dr. de Havilland Hall, and is brief and to the point. But why does the writer pass over without mention the question of the after treatment of pleurisy? He would surely be the first to admit that where adhesions have formed an immense deal may be done, as for example by regular respiratory exercises, to ward off those serious sequelæ of the condition which render it of such doubtful prognosis. The first part of the book is brought to a close by the editor, who contributes a short but useful article on disorders of the diaphragm.

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* A Manual of Medicine. Edited by W. H. Allchin, M.D., Lond., F.R.C.P., F.R.S. Ed., Senior Physician and Lecturer on Clinical Medicine, Westminster Hospital. Vol. IV. Diseases of the Respiratory and of the Circulatory Systems. London: Macmillan and Co., Limited. 1902.

With two small exceptions the diseases of the circulatory system are throughout described by Dr. Mitchell Bruce, and, as would be expected, a most admirable and lucid account is given of the subject. The exceptions consist of Dr. Leonard Hill's contribution to the physiology of the circulation, to which allusion has already been made, and a very good article on œdema in general by the editor. The latter provides an excellent statement of the present position of our knowledge on this much debated subject.

A PRACTICAL MANUAL OF INSANITY FOR THE MEDICAL STUDENT AND GENERAL PRACTITIONER.*

We have pleasure in calling attention to the appearance of a very excellent Manual of Insanity, especially written for the use of senior students and those who are engaged in the practice of general medicine. Drs. Brower and Bannister are to be congratulated on the manner in which they have carried out their intention. The pervading characteristic of the book is a clear and good clinical description of the chief forms of mental disorder, which will, we think, be of great assistance to practitioners in aiding the recognition of the various types of insanity. A considerable amount of attention is devoted to the treatment of the conditions dealt with, and there is a useful, though short, chapter on the ethics of insanity, which is again of very practical interest. We would further draw attention to the chapter on classification, in which several well-known methods for the grouping of mental diseases are given. There can be no doubt that this is a very useful book.

LIGAMENTS: THEIR NATURE & MORPHOLOGY.†

The publication of a third edition of this fascinating little volume is evidence of its popularity and usefulness. Since the appearance of the first edition the study of morphological anatomy has become an essential part of the student's curriculum. This, in a large measure, has been due to the author's investigations, and their publication in a form easily accessible and intelligible to the ordinary student. The subject has numerous practical aspects, which raises it out of the category of useless transcendentalism. Further, the student who takes a keen interest in the "morphological significance" of the structures he is dissecting is by no means "inveigled from the study of practical anatomy," but has his interest sharpened and stimulated, so that the subject is got up more thoroughly and enjoyably.

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* A Practical Manual of Insanity for the Medical Student and General Practitioner. By Daniel R. Brower, A.M., M.D., LL.D., Professor of Nervous and Mental Diseases in Rush Medical College, and Henry M. Bannister, A.M., M.D., formerly Senior Assistant Physician, Illinois Eastern Hospital for the Insane. Philadelphia and London: W. B. Saunders and Co., 1902.

† Ligaments: their Nature and Morphology. By J. Bland-Sutton. Third edition. London: H. K. Lewis.

The present edition shows evidence of careful revision. A few minor details have been left out, and fresh matter has been included on the degeneration of osseous and cartilaginous tissues, on the avian tarsus and annular ligaments, on the ligamentum teres, and on the anterior arch of the atlas.

THE SANATORIUM TREATMENT OF PHTHISIS.*

THE handbook of open-air treatment by Drs. Reinhardt and Thomson gives a very good account of the details of the hygienic treatment of consumption. It is so far excellently suited for the guidance of patients who have either passed through a stage of sanatorium life, or are obliged, on account of expense, to adopt the nearest approach to it of which their surroundings permit. The book will also be of service to practitioners in carrying out the home treatment of their consumptive patients. But, as usual in such publications, it is disfigured by a preliminary section on the symptoms and pathology of the disease, which should have no place in a book intended for the use of patients themselves, and which for a practitioner of medicine is quite unnecessary.

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* A Handbook of the Open-Air Treatment and Life in an Open-air Sanatorium. By Dr. Charles Reinhardt, Physician, Hailey Open-air Sanatorium, Wallingford; and Dr. David Thomson, Senior Resident Physician, Stourfield Park Sanatorium, Bournemouth. London: John Bale, Sons, and Danielsson, Ltd. 1902.

The Selection of Consumptive Cases for Sanatorium Treatment. By T. N. Kelynack, M.D., M.R.C.P., Assistant Physician to the Mount Vernon Hospital for Consumption and Diseases of the Chest. London: The Scientific Press, Ltd. 1902.

Dr. Kelynack's pamphlet on the selection of cases for sanatorium treatment is an excellent and carefully thought out essay which is worthy of all praise. It is written for the use of medical men alone, and states most clearly and sensibly the difficulties which surround the choice of suitable cases and of a desirable place to which to send them. Especial attention is given to the matter of the selection of cases for treatment in public sanatoria, and an appeal is made for the exercise of greater care in this respect. We heartily welcome Dr. Kelynack's demonstration of the need for a much larger supply of sanatoria for the so-called "competent" class, consisting of those who are able to support themselves under ordinary circumstances, but whose resources are insufficient to meet the strain of prolonged sanatorium treatment. For these, institutions partially supported by benevolence are urgently needed. We also entirely concur with the contention that it must ultimately be recognised as the duty of the State to provide sanatoria for the poorer consumptive classes unconnected with the administration of the Poor Law.

PRACTICAL FIRST AID.*

Dr. Robertson's Treatise on First Aid is extremely practical in character, and is one of the best books of this sort which we have seen. It is illustrated by a series of admirable photographs taken by the author, which are far above the average of the illustrations met with in such works. For this reason alone it is sure to be widely appreciated. The present edition has been carefully revised.

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* Practical First Aid. By Wm. Robertson, M.D., D.P.H., Medical Officer of Health and Surgeon of Police for Leith. Third Edition. Paisley: Alexander Gardner.

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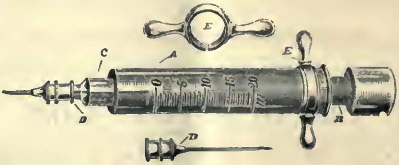
New Inventions, Drugs, etc.

MESSRS. BURROUGHS & WELLCOME send us one of their "All-Glass" Aseptic Hypodermic Syringes, which are admirably adapted for the maintenance of absolute cleanliness and asepticity. In this syringe the barrel, piston and nozzle consist entirely of glass, the working surfaces of which are ground to fit each other so that the solid piston B glides easily and evenly within the barrel A. The nozzle C fits into the barrel A by means of a perfect plug joint, and takes a needle D of the usual pattern. It will be seen that except during its passage through the needle the solution comes in contact with glass surfaces only, and the four essential parts of the syringe—barrel, piston, nozzle and needle—are detachable, and may be rendered perfectly aseptic. The syringe can be conveniently used for the preparation of hypodermic solutions by means of Messrs. Burroughs and Wellcome's hypodermic Tabloids. They can be obtained of either 15 or 20 minims' capacity.



Messrs. Southall, Bros., and Barclay Ltd., send us a sample of their new preparation of cod liver oil, to which the name "Lofotol" has been given. The preparation is described as a saturated solution of pure carbonic acid gas in cod liver oil. It is not only far more palatable than the ordinary preparations, but the presence of the gas must undoubtedly aid materially in its digestion. It is further claimed that the carbonic acid retards the oxidation of the oil which results in the formation of free fatty acids, and thus goes far to do away with the unpleasant rancid taste which is apt to develope in kept specimens. We think that the preparation should prove a very valuable one.

We have further received from Messrs. Scott and Bowne, Ltd., specimen copies of "Scott's Emulsion Doctor's Diary and Emergency Note Book" for 1903.

New Books, etc., Received.

From W. B. Saunders and Company—

The International Text-Book of Surgery. By British and American Authors. Edited by A. PEARCE GOULD, M.S., F.R.C.S., and J. COLLINS WARREN, M.D., LL.D. Volume II. Regional Surgery.

A Text-Book of Surgical Principles and Surgical Diseases of the Face, Mouth, and Jaws, for Dental Students. By H. HORACE GRANT, A.M., M.D.

The Elements of Bacteriological Technique. A Laboratory Guide for the Medical, Dental, and Technical Student. By J. W. H. EYRE, M.D., M.S., F.R.S. Edin.

Diseases of the Pancreas and their Surgical Treatment. By A. W. MAYO ROBSON, F.R.C.S., and B. G. A. MOYNIHAN, M.S. Lond., F.R.C.S.

From Young J. Pentland—

Manual of Bacteriology. By ROBERT MUIR, M.A., M.D., F.R.C.P. Edin., and JAMES RITCHIE, M.A., M.D., B.Sc. Third Edition.

From The Scientific Press, Limited—

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